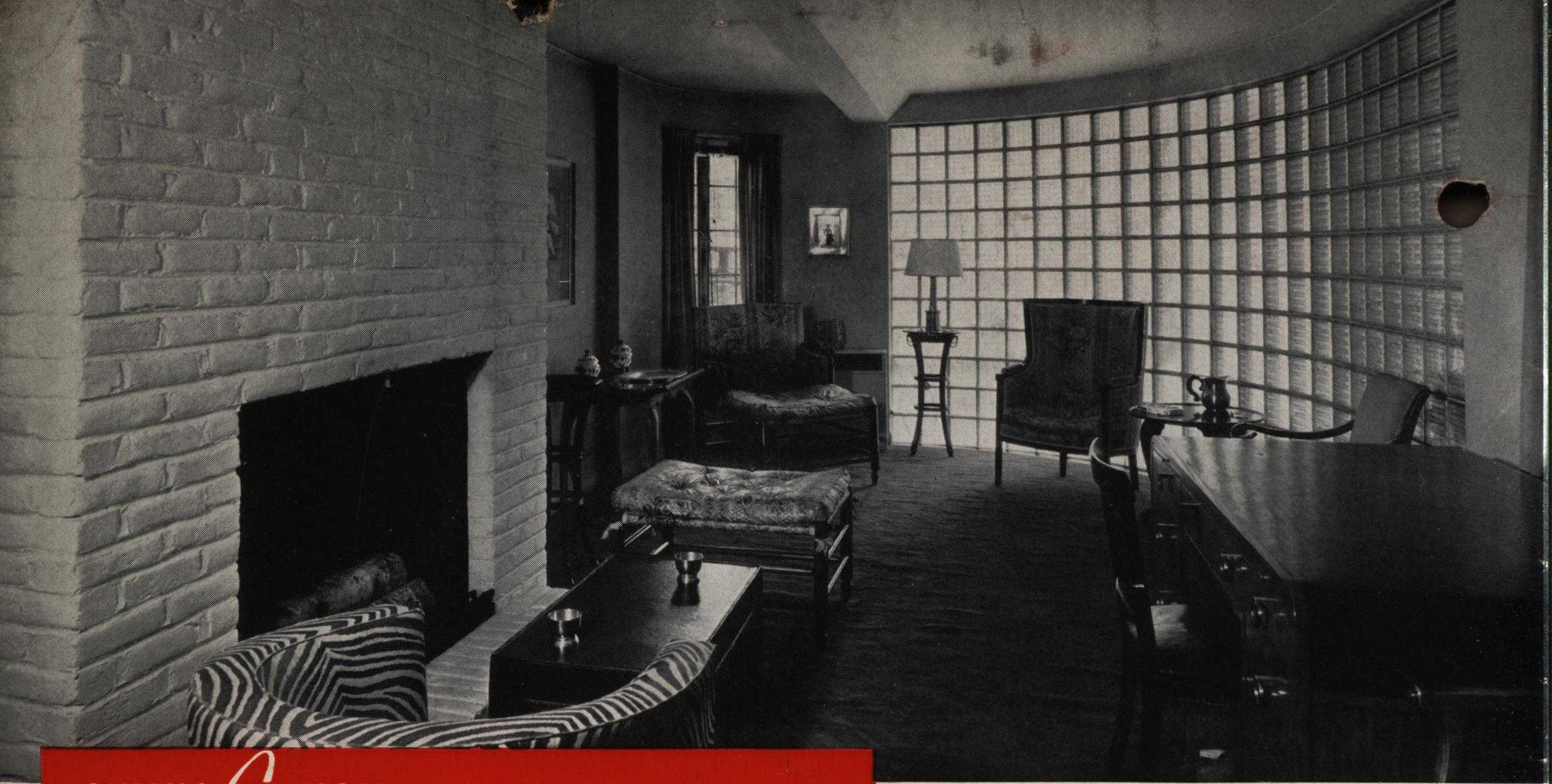
OWENS-ILLINOIS

INSULUX

GLASS BLOCK

1940

OWENS-ILLINOIS GLASS COMPANY... INSULUX PRODUCTS DIVISION... TOLEDO, OHIO



Rebori Apartments, Chicago, Ill.—Andrew Rebori, Archt.

OWENS-ILLINOIS *Insulux* GLASS BLOCK

MANUFACTURED BY INSULUX PRODUCTS DIVISION
OWENS-ILLINOIS GLASS COMPANY

INSULUX is manufactured by the Owens-Illinois Glass Company, nation-wide glass manufacturer, producing one of the largest tonnages and greatest diversifications of glass made in the world today. Owens-Illinois has developed and perfected not only the idea of glass block but glass insulators, all types of glass containers, glass home insulation, glass filters for filtering dust, and a family of glass industrial insulations.

With a daily capacity of thousands of tons of glass and 65 years' experience in manufacturing glass for use exposed to weather and chemical reaction under every conceivable condition, Owens-Illinois has had an ideal background for its work in the glass block field.

As a result, INSULUX has been developed with its own special plant and its own special glass as one of the most practical and best engineered materials ever brought to the building field. A corps of staff architects and engineers has worked continuously with glass technicians to produce a product to meet the everyday practical problems which architects and engineers must solve for their clients. These Owens-Illinois architects and engineers after seven years are still a part of the Owens-Illinois staff, working for the further perfection of INSULUX.

More than fifty thousand actual installations give testimony of the success with which INSULUX has met the needs of modern architecture. It is this success, typical of a long history of successful development and production of glass products that establishes the phrase "First in Glass" as the appropriate slogan of the Owens-Illinois Glass Company.

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2 RE 5-40-20M

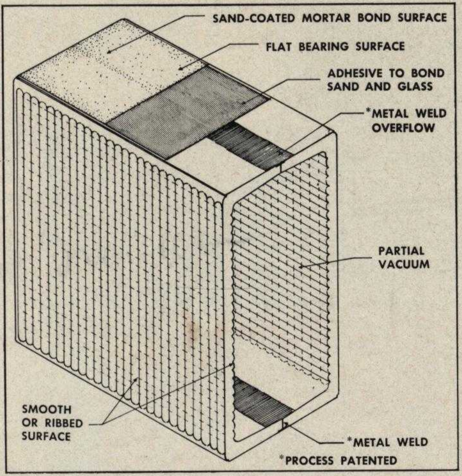
SERVICE TO ARCHITECTS

Owens-Illinois Glass Company maintains in its Architectural Department a well-qualified group of architects [illegible] engineers to check architects' glass block details, to provide architects with structural details for glass block construction and to supervise glass block construction on large jobs. *This service department does not function as an architect in competition with architects and does not prepare plans or sketches except as an aid to architects.*

USED TO TRANSMIT LIGHT... PROVIDE INSULATION... AND AS AN AID IN CREATING INTERESTING DESIGN

INSULUX A HOLLOW GLASS BLOCK

Owens-Illinois Insulux is a hollow, partially evacuated block made of water-clear pressed glass. It is hermetically sealed at the time of manufacture, and is finished on the mortar-bearing surfaces with a gritty mortar bond. This permits it to be laid up in mortar to create attractive, light-transmitting panels with high insulating value. Insulux is translucent, but not transparent, and is highly resistant to the transmission of sound.



INSULUX—SERVES MANY USES

These basic features have made Insulux practical for virtually all types of construction. Industry uses Insulux for its light transmission, insulation value and low maintenance. Homes use it as a new design element, as a source of greater light without undue heat loss, and as a means of obtaining privacy—from view and noise. Commercial structures also use it as a design element, and as a means of obtaining interesting lighting effects to attract public patronage. Air-conditioned structures use it to provide light and beauty and to cut down the cooling load.

INSULUX—THE RESULT OF EXTENSIVE RESEARCH

Insulux is a proven, practical building material. It has been the object of extensive research both within the company and by outside, independent laboratories. Of interest to architects, is the fact that Insulux research has not only gone into the physical characteristics of the material itself, but also into its application and use under field conditions.

INSULUX—ERECTED BY BRICKLAYER OR MASON

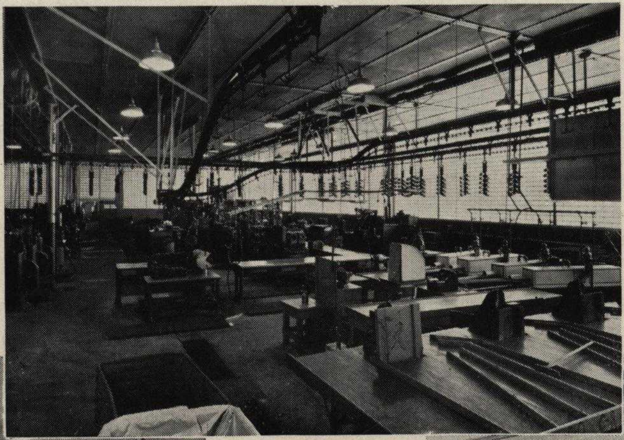
From this field experience has been developed the standard method of erection of Insulux Glass Block. It is laid up by the bricklayer or mason using a Portland cement-lime-sand mortar. Thus, it is handled by one of the oldest, most capable, and best established building trades.

INSULUX—SOLD BY DEALERS

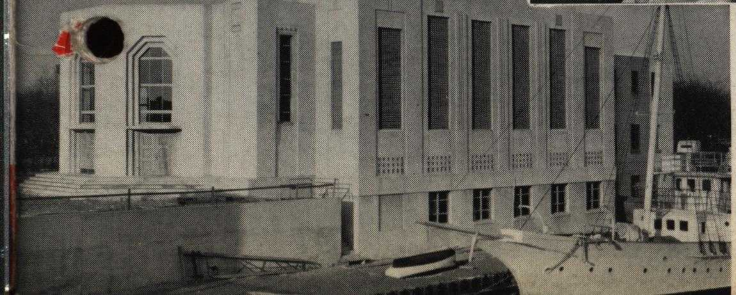
Insulux Glass Block is sold by dealers. It is stocked in different sizes and designs to permit efficient delivery service in any desired quantity.

INSULUX—STOCKED IN ALL PRINCIPAL MARKETS

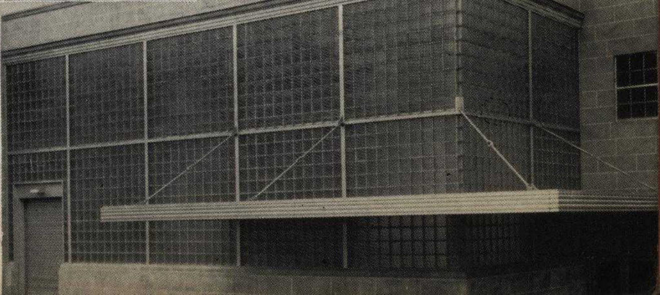
Insulux dealers have been established in all principal markets. Many hundreds of them are located throughout the nation to provide efficient coverage throughout the country. Each has a genuine interest in the success of Insulux and is ready to be helpful in any way he can to those who contemplate using it.



Temperature
Control Chamber,
Plymouth Division,
Chrysler Corporation,
Albert Kahn, Inc.
Architect

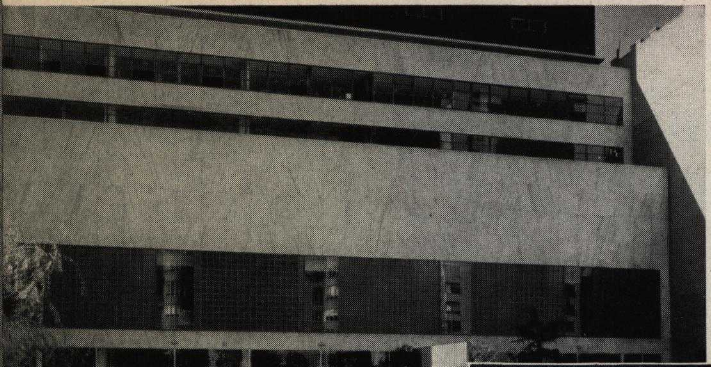


Naval Armory
Indianapolis, Indiana
Bacon & Tinslow, Architects



University of Wisconsin Memorial Union
Madison, Wisconsin
Corbett & McMurray, New York City, Architects

SPECIAL FEATURES AND ADVANTAGES



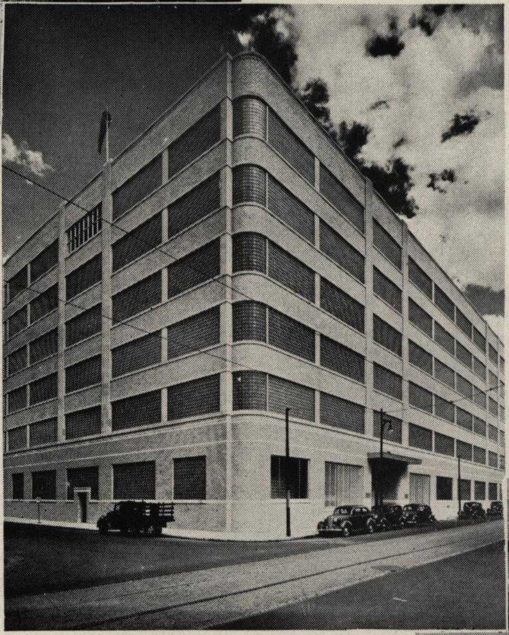
Museum of Modern Art
Philip L. Goodwin and Edward D. Stone, Architects, New York City

DESIGN

Because of its great flexibility in use, INSULUX Glass Block may be adapted to harmonize with most types of architectural design. In every kind of building—Industrial, Public, Commercial and Residential, INSULUX has been used successfully and economically. In homes and certain other structures, INSULUX creates a center of interest, lending a pleasing note to the whole design.

TRANSMISSION OF LIGHT

INSULUX being a hollow glass unit insures a wider range of face designs than is possible with a single sheet of glass because of the four surfaces which may be treated. This unusual feature of INSULUX makes possible a wider variety of patterns and light transmitting values than is obtainable in single flat glass. INSULUX is available in a range of designs, varying in normal face light transmitting value depending upon the design selected.

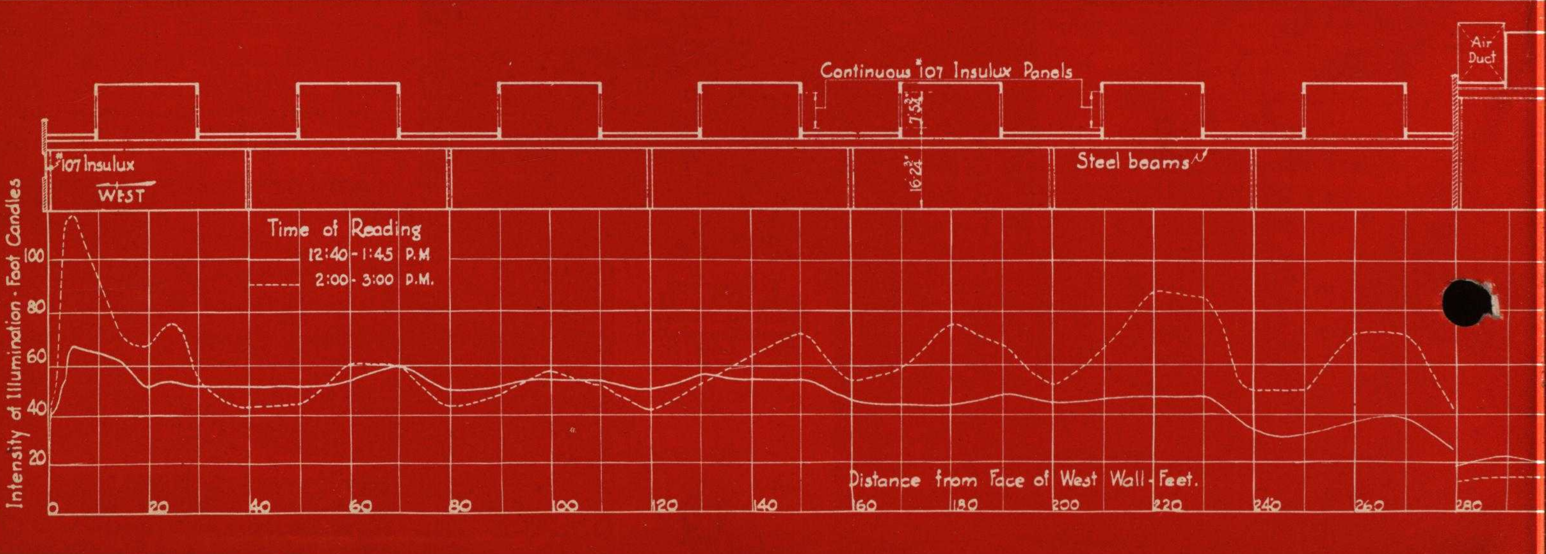


The Detroit Edison Co.
Detroit, Mich.
Designed by John Thornton

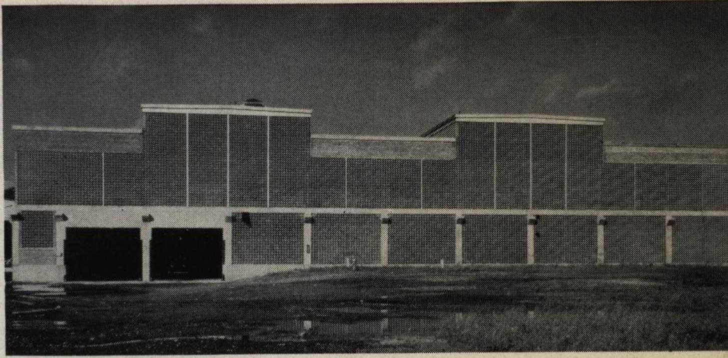
DIFFUSION AND DISTRIBUTION OF LIGHT

Face designs of INSULUX Glass Block being formed on four surfaces have the inherent ability to properly diffuse and distribute light. Some INSULUX designs have been developed for their decorative qualities, and others for their practical application in the transmission of light. The chart on pages 8 and 9 classifies these blocks accordingly. A typical illustration of the light distribution which might be expected through INSULUX Glass Block is shown in the curve of light readings (at the bottom of these pages) taken at the Painesville, Ohio plant of the Industrial Rayon Corporation where INSULUX was used in the monitors.

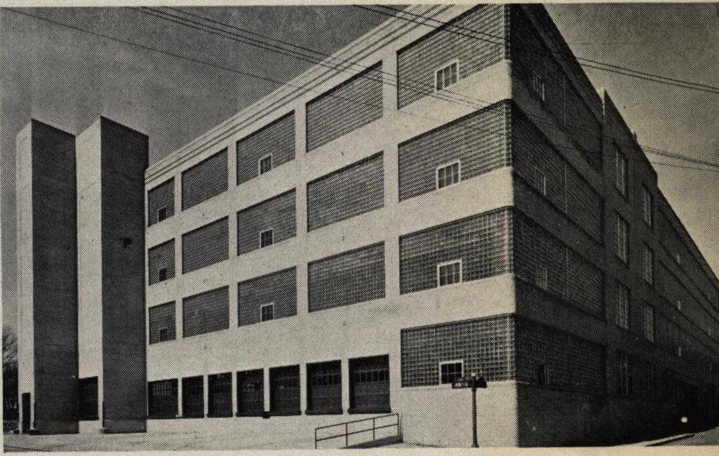
Industrial Rayon Corporation, Painesville, Ohio
Wilbur Watson & Associates, Architects & Engineers
L. J. Jordan, Chief Engineer for Industrial Rayon Corporation



OWENS-ILLINOIS
OF *Insulux* GLASS BLOCK



Western Printing & Lithographing Co., Poughkeepsie, N. Y.
Edwin J. Kraus, Architect



Philip Morris & Co., Ltd., Richmond, Va.
Francisco & Jacobus, Architects

THERMAL INSULATION

INSULUX Glass Block panels are highly resistant to heat loss by conductance. Because of this insulating value, large light transmitting areas are practical without the excessive heat loss which is experienced with sash. The low conductance of INSULUX Glass Block plus its ability to reduce solar heat transmission as compared to sash, makes it admirably adapted to use in air-conditioned buildings. It provides ample light and reduces cooling costs. (See Technical Data, page 24.)

REDUCTION OF CONDENSATION

Condensation on the inside of windows during cold weather causes deterioration of sash. It is particularly prevalent in buildings where a high degree of humidity is maintained, such as dairies, food plants, textile and paper mills, tobacco factories, etc. INSULUX, because of its high insulating value, will reduce this condensation and resulting deterioration.

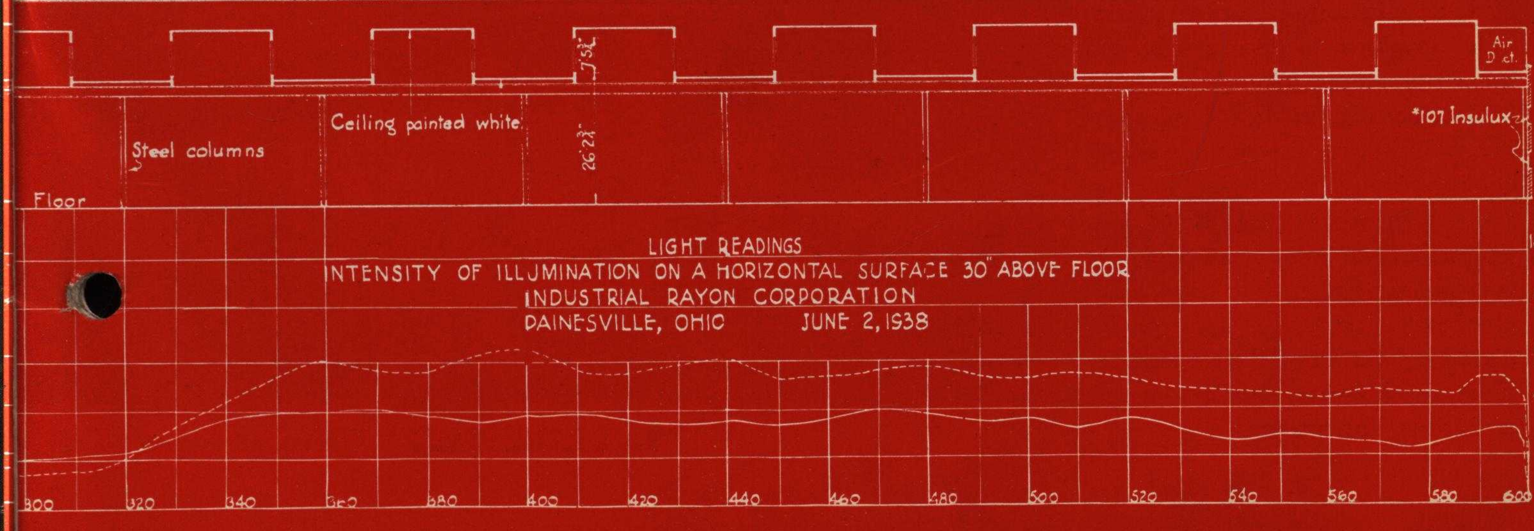
REDUCTION OF SOLAR HEAT

Much of the cooling load on air-conditioning equipment is due to the transmission of solar heat through light transmitting areas which are exposed to the sun. Tests conducted at Purdue University show that INSULUX Glass Block panels materially reduce the solar heat transmission as compared to single glazed sash. This property of INSULUX Glass Block to reduce solar heat transmission, together with its low conductance and its reduction of infiltration, makes it ideal for use in air-conditioned buildings. (See Technical Data, page 24.)

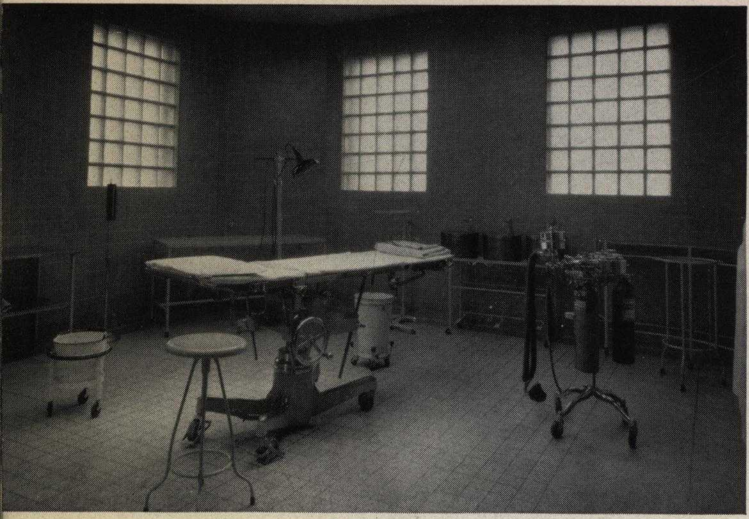
BUILDING CODES

For their recommended uses, INSULUX Glass Block have met with acceptance by and approval of state and municipal building commissioners, including the Pacific Coast Building Officials Conference. The strength of individual units and panels, their wind resistance, their fire and hose stream resistance, and other essential physical properties have been demonstrated at Purdue, Columbia and Leland Stanford, Jr., Universities, the National Bureau of Standards and at the Underwriters' Laboratories, Chicago. These tests have been conducted in the presence of numerous building code authorities. Official approvals conforming to Owens-Illinois Glass Company's basic specifications (See pages 22 and 23) have been secured from: Industrial Board, State of New York; Wisconsin State Industrial Commission; Building Department, District of Columbia; Building Departments of Boston, New York, Chicago, Los Angeles, St. Louis and others.

West Coast approvals and that of the City of New York, due to local demands, require smaller maximum panel sizes and additional reinforcement. Existing local requirements for the use of glass block are available on request.



SPECIAL FEATURES AND ADVANTAGES



Dover Hospital
Jacob J. Vreeland, Architect
Dover, New Jersey

West Side of 3rd Ave. between 77th and 78th—owned by the
Ogden Goelet Estate, New York City
E. H. Faile, Engineer—Starrett Bros. & Eken, Contractors

REDUCTION OF AIR INFILTRATION

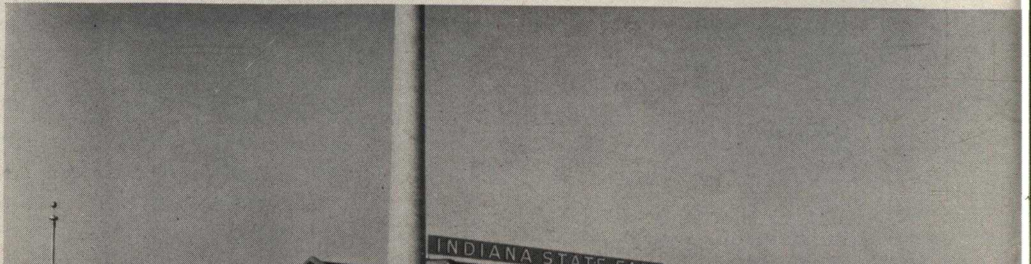
Air leakage through and around windows adds to the cost of heating in the winter time, increases air-conditioning costs in the summer, and, in certain industries in which high humidities are maintained, causes the formation of ice on the outside of the building in cold weather. Typical methods of installation have been developed for INSULUX Glass Block panels which, for all practical purposes, almost entirely eliminate these problems of air leakage, while aiding the maintenance of desired interior temperature and humidity.

REDUCTION OF SOUND TRANSMISSION

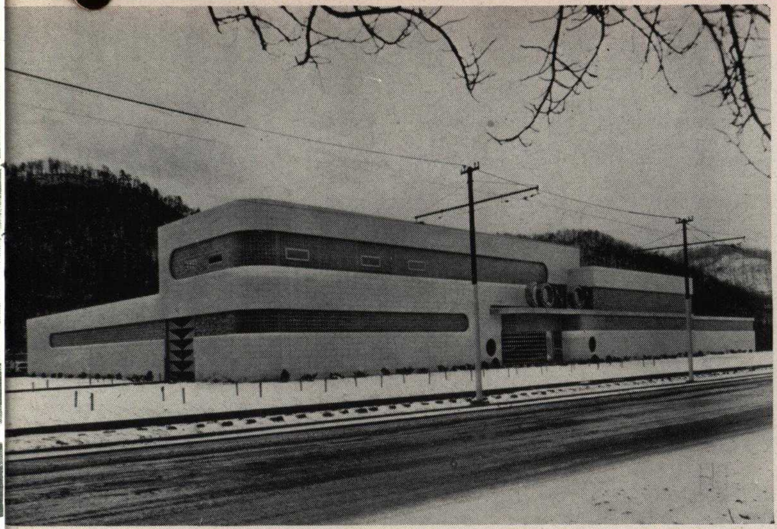
Tests at the National Bureau of Standards show that INSULUX Glass Block panels have a sound reduction factor comparable to that of the usual partition used in fireproof structures. INSULUX can be used in light transmitting partitions without materially decreasing noise-reduction efficiency. This sound transmitting resistance makes INSULUX ideal for use in the exterior walls of buidings located near sources of noise —such as apartment buildings in New York and Chicago adjacent to elevated railways. (See Technical Data, page 24.)

STRUCTURAL STRENGTH

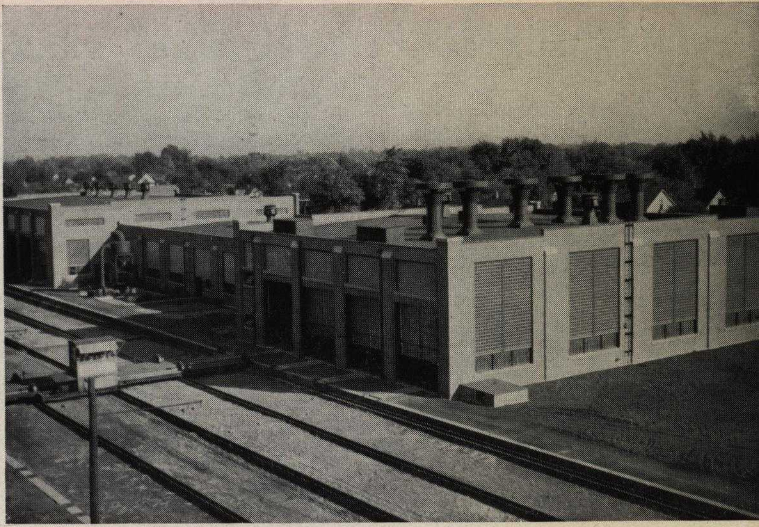
As a result of the exclusive Owens-Illinois method of manufacture, INSULUX Glass Block has a uniform wall thickness that makes it possible to anneal the block properly, and to eliminate internal strain. This develops to the utmost the natural strength of the glass. INSULUX is not offered as a load-bearing material, yet it possesses ample compressive strength to be self-supporting within the limits prescribed by the ratio of its thickness to any practical height. (See Technical Data, page 24.) Tests on individual units as well as panels of glass block have been performed at Purdue University.



Cattle Judging Pavilion, Indianapolis, Indiana
Russ & Harrison, Architects



Conlon Bakery, Charleston, West Virginia
McCormick Co., Inc., Architects, Pittsburgh



C & E I Railroad Machine Shops
J. S. McBride, Chief Engineer

SANITATION AND CLEANLINESS

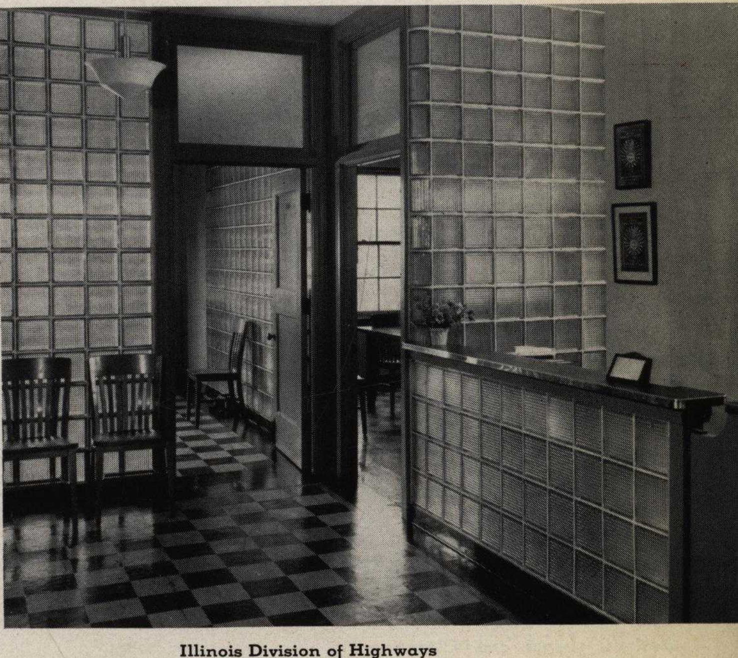
INSULUX Glass Block walls are easy to clean. It is the natural characteristic of glass to be non-absorbent to liquids, odors and grease. Several of the INSULUX designs have smooth exterior faces, the designs being impressed only on the interior faces of the block. In other block designs, the faces have simple ribs running vertically on the exposed faces and horizontally on the interior faces of the block. (See pages 8 and 9.) The character of these outside surfaces minimizes the accumulation of surface dirt and facilitates its removal. Dairies, hospitals, restaurants, packing plants, and in fact, all structures requiring high standards of cleanliness make use of this excellent feature of INSULUX in exterior walls and interior partitions.

PRIVACY

In certain types of commercial and industrial buildings, and in certain installations in the home, privacy is an important consideration. INSULUX permits privacy without the darkness that is usually associated with it. In homes, it is widely used to light bathrooms, stair wells and basements where ample light with privacy is desired. INSULUX is equally effective in commercial buildings, finding widespread acceptance as the modern method of office partitioning. It is particularly adaptable to schools and hospitals where both privacy and light are essential. It also permits undesirable views to be shut out without lessening the amount of light wanted.

LOW MAINTENANCE

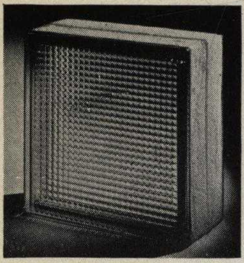
INSULUX Glass Block walls and panels require little maintenance other than occasional cleaning. The hard, brilliant surface of the block has the natural permanence and durability of glass. Obviously, INSULUX does not require painting, either inside or out. The requirements of janitor service are similarly reduced. Should a block be damaged through carelessness or accident, it may be removed easily by sawing out joints. The new block is then buttered with mortar, inserted in place and the job completed by pointing.

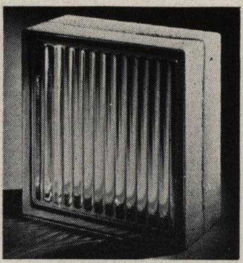


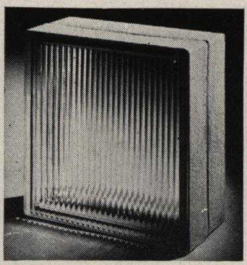
Illinois Division of Highways
Ralph Harris, Architect

DESIGNS, SIZES AND DESCRIPTION OF

FOR FUNCTIONAL LIGHT TRANSMISSION


DESIGN No. 1


DESIGN No. 7

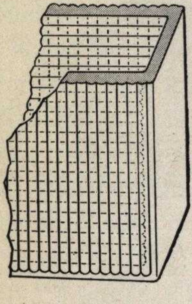

DESIGN No. 11

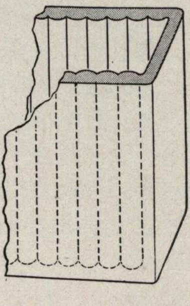
- These designs have found the best acceptance in buildings with large glass areas and where the occupancy requires well diffused and distributed light. They are well adapted to use in offices, class rooms, factories, etc. Frequently blocks of these designs are used for interior partitions in buildings using light directional blocks in exterior walls.

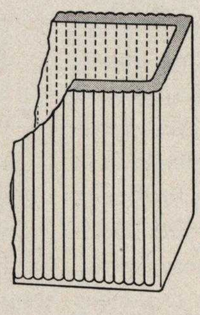
Design consists of ¼-in. convex ribs carried vertically on both exterior faces and horizontally on both of the interior faces.

Design—½-in. (1 in. for 400 series) convex ribs carried vertically on both of the interior faces. Both of the exterior faces are smooth.

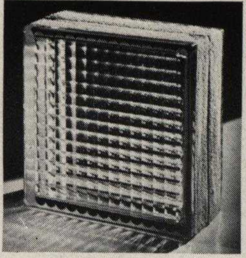
Design consists of ¼-in. convex ribs carried vertically on both of the exterior faces. Both of the interior faces are smooth.

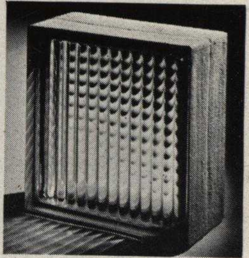






FOR DECORATIVE

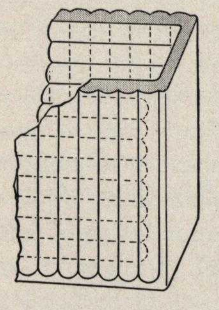

DESIGN No. 2

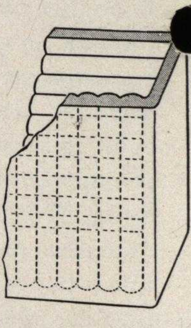

DESIGN No. 16

- These designs have found the best acceptance where the decorative qualities of the block are paramount and where surface brightness is

Design—½-in. (1 in. for 400 series (convex ribs carried vertically on both exterior faces and horizontally on both of the interior faces.

Design—½-in. (1 in. for 400 series) convex ribs carried vertically on one interior face and horizontally on the other. Exterior faces smooth.





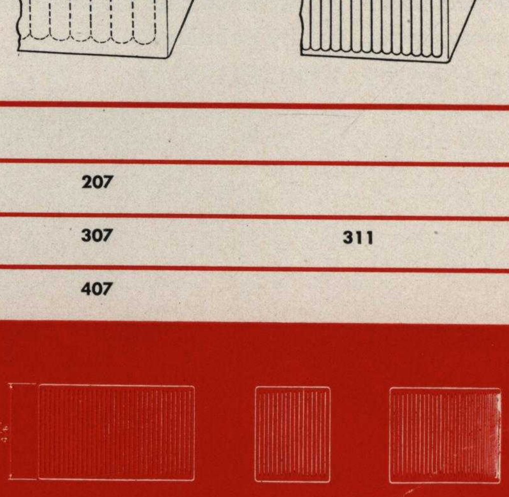
SERIES NUMBER	DESIGN No. 1	DESIGN No. 7	DESIGN No. 11	DESIGN No. 2	DESIGN No. 16
100	101 101-H (Half)				
200		207		202	
300	301	307	311	302	316
400		407		402	416

SERIES AND SIZE OF RECTANGULAR BLOCKS

Sizes in Inches

SERIES 100	8 x 4⅞ x 3⅞
SERIES 200	5¾ x 5¾ x 3⅞
SERIES 300	7¾ x 7¾ x 3⅞
SERIES 400.	11¾ x 11¾ x 3⅞

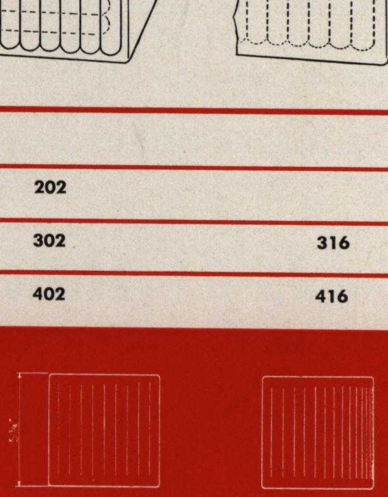
Designs, shapes and sizes are subject to change without notice.



REGULAR HALF CORNER

100 SERIES

8" x 4⅞" OBLONG BLOCK

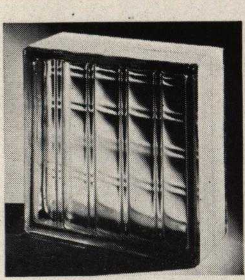


REGULAR CORNER

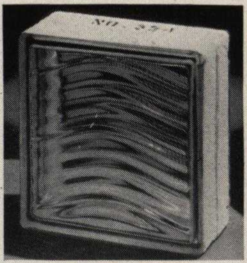
200 SERIES

5¾" SQUARE BLOCK

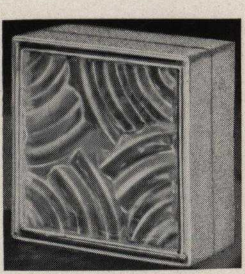
LIGHT TRANSMISSION



DESIGN No. 17



DESIGN No. 24



DESIGN No. 30

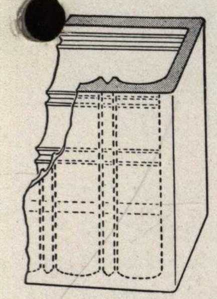
desirable to obtain architectural effects. Their use in rooms of buildings where surface brightness is objectionable should be limited to north exposures.

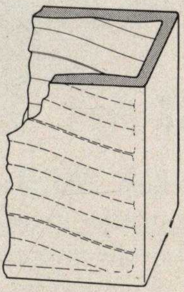
They are particularly effective when used in decorative interior panels.

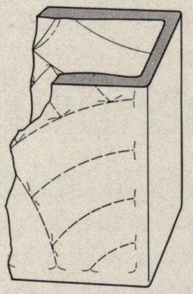
Design—1½-in. (1⅝ in. for 400 series) concave ribs on both interior faces—vertical on one, horizontal on other. Both exterior faces smooth.

Designed by Walter Dorwin Teague. This block is smooth on the exterior faces with horizontal waved ribs of varying sizes on both interior faces.

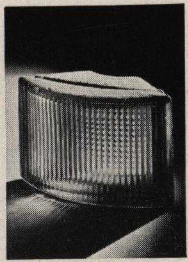
Design—both exterior faces smooth. Interior design suggests a repeating quarter circular effect, forming continuous concentric circles in the panel.





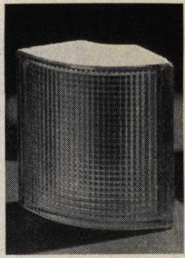


CORNER AND RADIAL BLOCKS



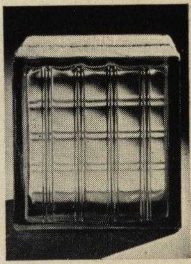
LIGHT-TRANSMITTING CORNER

Block to be used with No. 100 series. Height 4⅞-in. Vertical ribs on face of large radius and horizontal on face of small radius, ¼- and ½-in. ribs for "A" and "B" block respectively.



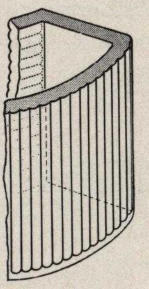
LIGHT-TRANSMITTING CORNER

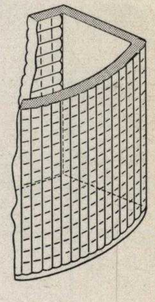
Block to be used with No. 200 and 300 series. Height 5¾-in. for 200 series and 7¾-in. for 300 series. Corners conform with design of standard block as noted by number.

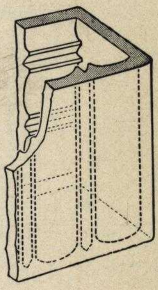


RADIAL

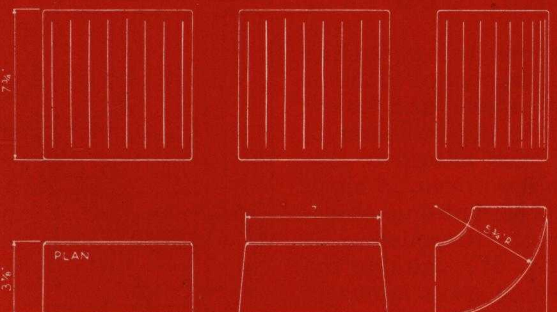
Radial block can be laid to varying radii from 3 ft. 6 in. to 6 ft. through variation in mortar joint. Width of long face 7¾ in., of short face 7 in. Design same as No. 317 Block with inside ribs, vertical on wide face, horizontal on narrow face. Available in 301 face design.







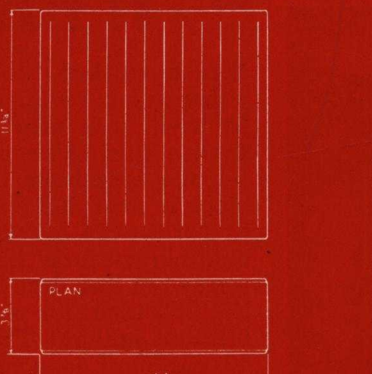
			100-AL-¼" RIB		
				202-C	
317	**324**	**330**		**301-C 302-C 317-C** **324-C 330-C**	**301-R** **317-R**
417	**424**				



REGULAR **RADIAL** **CORNER**

300 SERIES

7¾" SQUARE BLOCK



REGULAR

400 SERIES

11¾" SQUARE BLOCK

Certain designs and sizes of blocks shown in our previous catalogue are still available for special installations.

●

See Pages 10 and 11. FOR NEW LIGHT DIRECTIONAL BLOCKS

OWENS-ILLINOIS *Presents the New*

Owens-Illinois Glass Company, pioneers of Glass Block, now offer to the building field, three new functional glass blocks. These blocks have been designed to meet the demand of architects and engineers for light transmitting areas which are subjected to direct sunlight as on the East, West, and South exposures with:

1. **Minimum of surface brightness**
2. **High insulation value**
3. **Adequate light transmission**
4. **Good light distribution**
5. **Control of light in areas adjacent to outside walls**
6. **Lower total solar heat transmission**

Two of these new blocks (351 and 352) are of the light directional type designed to throw the light to the ceiling above the eyes of occupants of the room. Obviously, blocks of this type are intended to be used in that part of the panel which is above eye level. The third block (350) has been designed as a companion block to these two for use in panel areas below eye line. This third block transmits a softly diffused light desirable in areas immediately adjacent to outside walls. In combination, the use of these two blocks fulfills the above requirements and makes possible superior light distribution. (See Figures 1 and 2.)

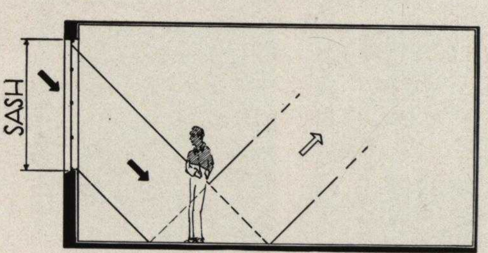


Figure 1
With sash, light is largely absorbed by dark floors

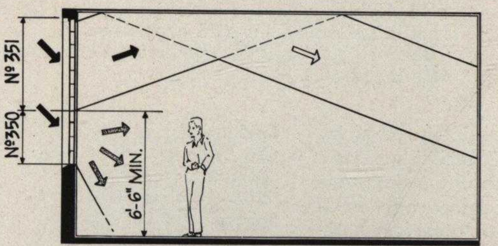
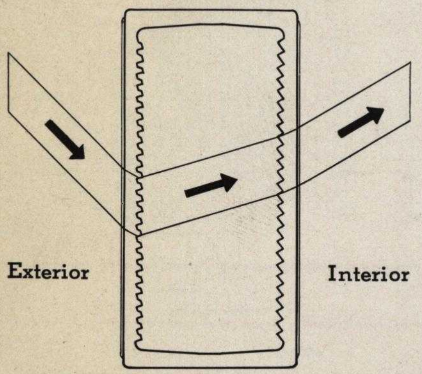


Figure 2
With Light Directional Block, light is reflected from the ceiling



Path of light through light-directional block

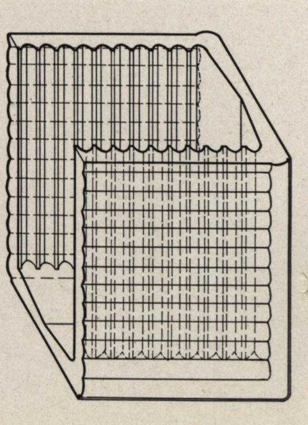
LIGHT DIRECTIONAL BLOCK Nos. 351 and 352

Both of these blocks are of the prismatic type. This means that the light is refracted by the prismatic designs of both interior faces so that it is directed upward to the ceiling, which has a higher reflective value than the darker floor areas. The prismatic designs being impressed on the interior faces of the block, are sealed against dirt, thus insuring permanent maximum efficiency.

A second advantage is the elimination of objectionable surface brightness because the light is directed above the eye level. Thirdly, loss of light caused by the shading effect of horizontal mortar joints is greatly reduced.

NO GLARE BLOCK No. 350

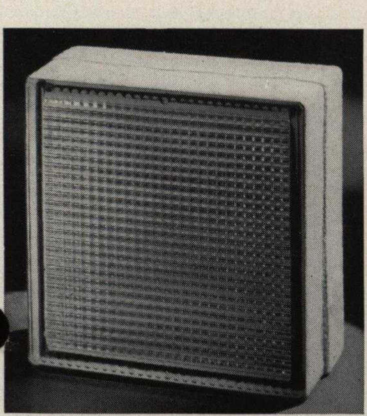
This block has been designed for use below eyeline either in combination with the Light-Directional Block or by itself. It is also used alone both above and below eyeline and offers an ideal solution to the problems of surface brightness and glare. The face design of this block is such that it harmonizes with the prismatic block and transmits a softly diffused light, eliminating objectionable surface brightness. Its light transmission is somewhat less than the No. 351 or No. 352, making the No. 350 ideal for use in localities which have intensely brilliant sunlight. **This block transmits approximately 40 per cent less total solar heat than a standard block.**



LIGHT DIRECTIONAL BLOCKS

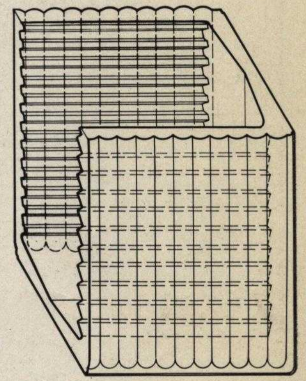
HI-LITE PRISMATIC BLOCK No. 352

This block is of the double prismatic type. It is designed to transmit a greater amount of available light than the No. 351. The light is refracted to the ceiling and distributed farther back into the interior of the building. Because this block has a higher light transmitting value than the No. 351, it shows somewhat greater surface brightness and is intended to be used at a minimum height of 7′6″ above floor level. For this reason, the No. 352 is especially adapted to use in lighting large interiors, such as are commonly found in factory buildings, field houses, gymnasiums, etc.



DIRECT-O-LITE PRISMATIC BLOCK
No. 351

This block is designed for general use in panels at a height not less than 6′6″ above floor level. When used at this height, it eliminates objectionable surface brightness. Because it directs light above the eye level and minimizes surface brightness, this block is ideally suited for installations in rooms of average size such as are typically found in schools, offices, etc.



HOW TO USE NEW FUNCTIONAL GLASS BLOCK

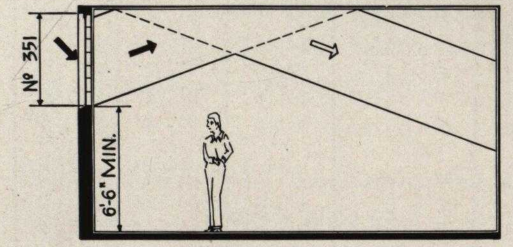


Figure 1

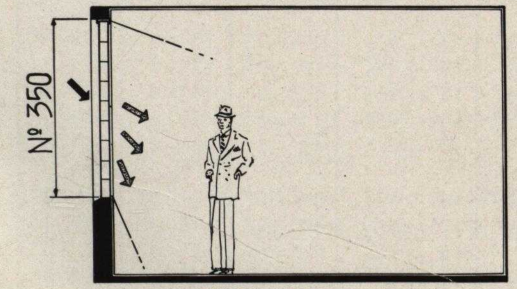


Figure 2

Fig. 1—Light directional block No. 351 directs the light to the ceiling. When used by itself the sill of the panel must be above eyeline.

Fig. 2—In rooms in which the sills of panels are below eyeline, the lower part of the panel is to be constructed of block No. 350 and the upper part (6′6″ above the floor) of block No. 351.

Fig. 3—In rooms in which high light transmission is not necessary, block No. 350 may be used in a panel by itself. If more light transmission is desired, use one of the other combinations shown here.

Fig. 4—In large rooms where high percentage of light transmission is required No. 352 may be used in panels above eyeline (not less than 7′6″ above floor). If sills of panel are below, use No. 350 from sill to a height of 7′6″ above the floor.

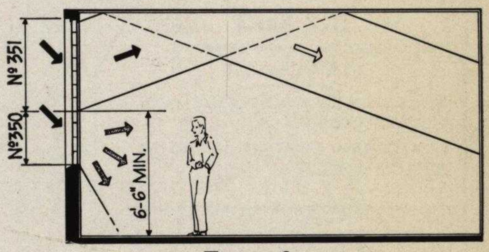


Figure 3

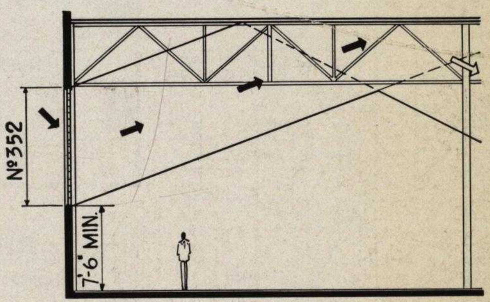


Figure 4

KEY

➡ Direct Light

⇨ Diffused Light

⇨ Reflected Light

DIMENSION TABLE
AND ERECTION
PROCEDURE

CONSTRUCTION DETAILS

OWENS-ILLINOIS
INSULUX
GLASS BLOCK

APPROXIMATE WEIGHT PER SQ. FT. OF INSULUX, LAID UP IN PANEL: 17.5 LB.

FUNDAMENTAL PRINCIPLES FOR THE ERECTION OF TYPICAL GLASS BLOCK PANELS

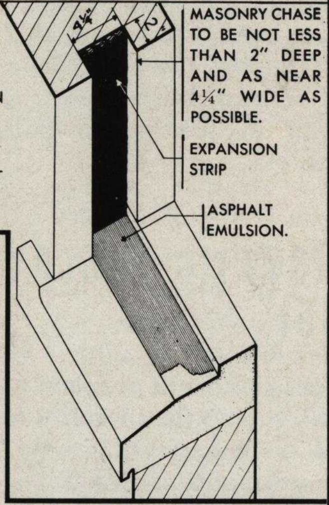
STEP No. 1

PRELIMINARY PREPARATION

FORM CHASE OF SIZE SHOWN—IN MASONRY OR BY METAL SHAPES.

APPLY ASPHALT EMULSION TO SILL

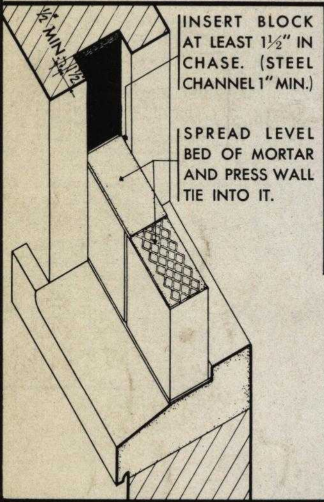
APPLY EXPANSION STRIP CONTINUOUSLY AT HEAD AND JAMBS.



MASONRY CHASE TO BE NOT LESS THAN 2" DEEP AND AS NEAR 4¼" WIDE AS POSSIBLE.

EXPANSION STRIP

ASPHALT EMULSION.



INSERT BLOCK AT LEAST 1½" IN CHASE. (STEEL CHANNEL 1" MIN.)

SPREAD LEVEL BED OF MORTAR AND PRESS WALL TIE INTO IT.

STEP No. 2

LAYING INSULUX

KEEP MORTAR OUT OF EXPANSION JOINT

USE FULL HEAD AND BED JOINTS.

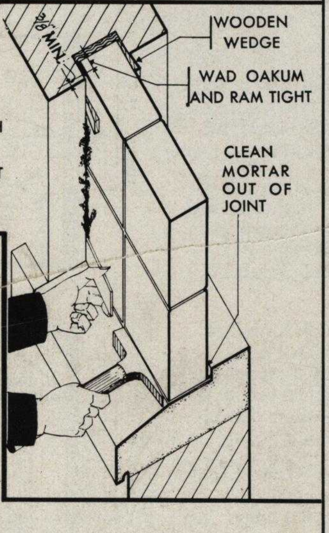
BED WALL TIE IN CENTER OF MORTAR JOINT.

STEP No. 3

BRACING PANEL AFTER MORTAR HAS SET

BRACE PANELS TEMPORARILY WITH WOODEN WEDGES.

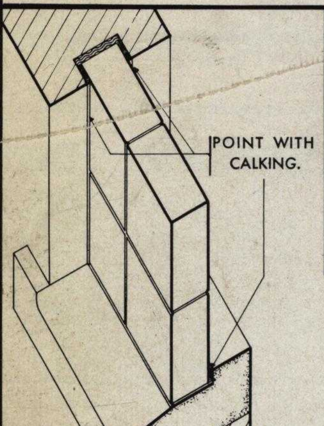
RAM OAKUM TIGHT IN SPACES AT SIDES OF BLOCK.



WOODEN WEDGE

WAD OAKUM AND RAM TIGHT

CLEAN MORTAR OUT OF JOINT



POINT WITH CALKING.

STEP No. 4

CLEANING AND CALKING

REMOVE WOODEN WEDGES.

CLEAN PANEL.

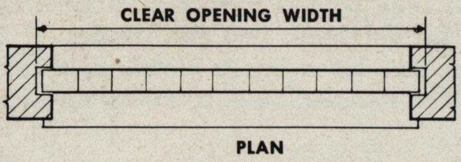
CALK TO DEPTH OF ⅜" MINIMUM.

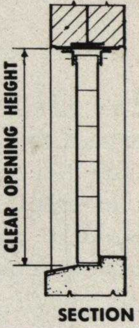
USE THIS PAGE IN CONJUNCTION WITH TYPICAL DETAILS AND SPECIFICATIONS

DIMENSION TABLE

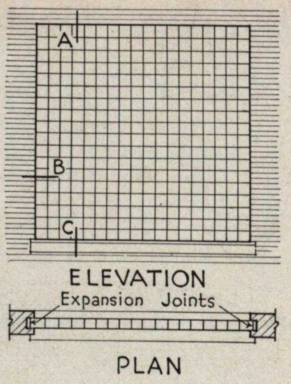
TO OBTAIN CLEAR OPENING SIZES ADD TO BLOCK TABLE DIMENSIONS:

WIDTH—AT LEAST ¾"
HEIGHT—AT LEAST ½" + MAX. LINTEL DEFLECTION





No. of Units	4⅞" x 8"		5¾" x 5¾"	7¾" x 7¾"	11¾" x 11¾"
	Height	Width	Height or Width	Height or Width	Height or Width
	¼" joints	¼" joints	¼" joints	¼" joints	¼" joints
1	5⅛"	8¼"	6"	8"	1' - 0"
2	10¼"	1' - 4½"	1' - 0"	1' - 4"	2' - 0"
3	1' - 3⅜"	2' - 0¾"	1' - 6"	2' - 0"	3' - 0"
4	1' - 8½"	2' - 9"	2' - 0"	2' - 8"	4' - 0"
5	2' - 1⅝"	3' - 5¼"	2' - 6"	3' - 4"	5' - 0"
6	2' - 6¾"	4' - 1½"	3' - 0"	4' - 0"	6' - 0"
7	2' - 11⅞"	4' - 9¾"	3' - 6"	4' - 8"	7' - 0"
8	3' - 5"	5' - 6"	4' - 0"	5' - 4"	8' - 0"
9	3' - 10⅛"	6' - 2¼"	4' - 6"	6' - 0"	9' - 0"
10	4' - 3¼"	6' - 10½"	5' - 0"	6' - 8"	10' - 0"
11	4' - 8⅜"	7' - 6¾"	5' - 6"	7' - 4"	11' - 0"
12	5' - 1½"	8' - 3"	6' - 0"	8' - 0"	12' - 0"
13	5' - 6⅝"	8' - 11¼"	6' - 6"	8' - 8"	13' - 0"
14	5' - 11¾"	9' - 7½"	7' - 0"	9' - 4"	14' - 0"
15	6' - 4⅞"	10' - 3¾"	7' - 6"	10' - 0"	15' - 0"
16	6' - 10"	11' - 0"	8' - 0"	10' - 8"	16' - 0"
17	7' - 3⅛"	11' - 8¼"	8' - 6"	11' - 4"	17' - 0"
18	7' - 8¼"	12' - 4½"	9' - 0"	12' - 0"	18' - 0"
19	8' - 1⅜"	13' - 0¾"	9' - 6"	12' - 8"	19' - 0"
20	8' - 6½"	13' - 9"	10' - 0"	13' - 4"	20' - 0"
21	8' - 11⅝"	14' - 5¼"	10' - 6"	14' - 0"	21' - 0"
22	9' - 4¾"	15' - 1½"	11' - 0"	14' - 8"	22' - 0"
23	9' - 9⅞"	15' - 9¾"	11' - 6"	15' - 4"	23' - 0"
24	10' - 3"	16' - 6"	12' - 0"	16' - 0"	24' - 0"
25	10' - 8⅛"	17' - 2¼"	12' - 6"	16' - 8"	25' - 0"
26	11' - 1¼"	17' - 10½"	13' - 0"	17' - 4"	26' - 0"
27	11' - 6⅜"	18' - 6¾"	13' - 6"	18' - 0"	27' - 0"
28	11' - 11½"	19' - 3"	14' - 0"	18' - 8"	28' - 0"
29	12' - 4⅝"	19' - 11¼"	14' - 6"	19' - 4"	29' - 0"
30	12' - 9¾"	20' - 7½"	15' - 0"	20' - 0"	30' - 0"
31	13' - 2⅞"	21' - 3¾"	15' - 6"	20' - 8"	31' - 0"
32	13' - 8"	22' - 0"	16' - 0"	21' - 4"	32' - 0"
33	14' - 1⅛"	22' - 8¼"	16' - 6"	22' - 0"	33' - 0"
34	14' - 6¼"	23' - 4½"	17' - 0"	22' - 8"	34' - 0"



PANELS IN 12" MASONRY WALLS

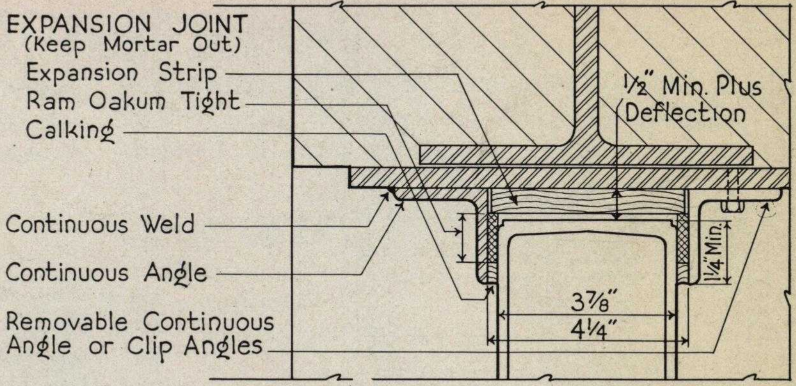
HEAD—Form "Expansion Joint" as shown on Detail A. **Keep expansion joints clear of all obstructions such as rivet or bolt heads, clip angles and mortar.**

JAMB—It is important to maintain the width and depth of "chases" as shown on Detail B. Irregularities of workmanship and material used in forming a masonry chase may be corrected where necessary by parging one or both sides of the chase. This permits the proper wedging action of the rammed oakum to support the panel against wind pressure.

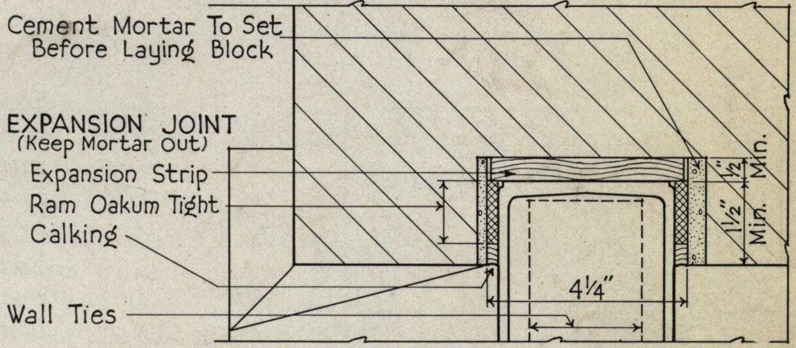
MORTAR JOINTS—All mortar joints are to be evenly and completely filled with mortar. Horizontal mortar joints are to be reinforced at intervals with continuous wall ties. See specifications.

SILL—Apply a heavy coat of asphalt emulsion before the first mortar joint is laid. Care should be taken in applying the emulsion to see that it covers the entire bed upon which the panel will rest. Allow emulsion to dry before spreading the mortar joint.

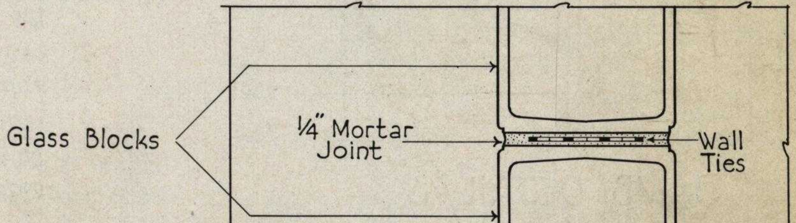
IMPORTANT . . . For panels larger than 144 sq. ft. in area, longer than 25 lineal ft. or higher than 20 lineal ft., see reinforcing details on pages 15 and 16.



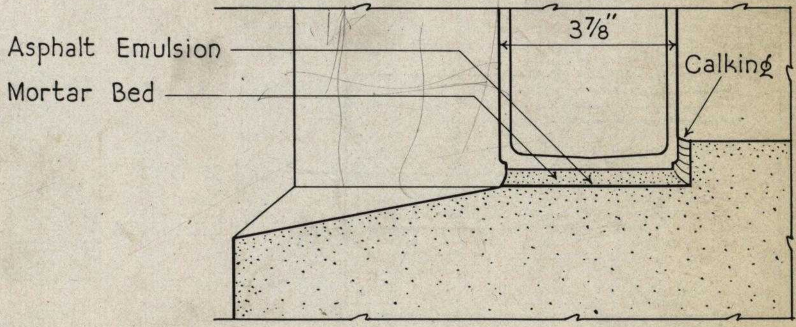
HEAD DETAIL "A"



JAMB DETAIL "B"

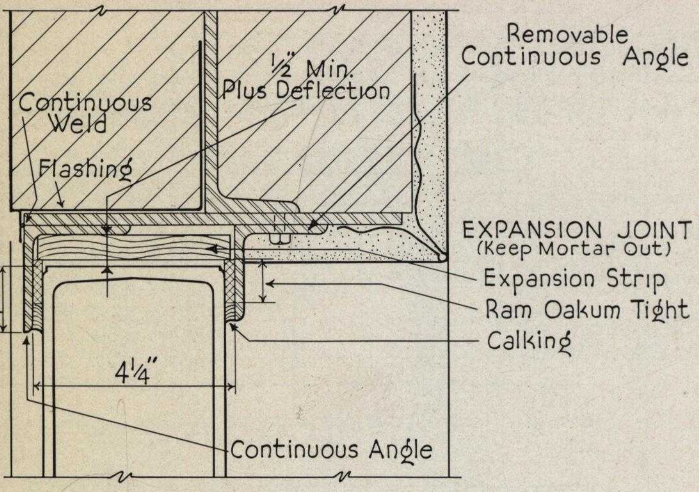


MORTAR JOINT DETAIL

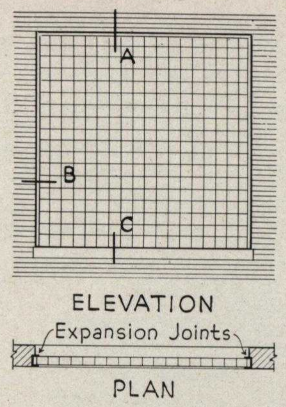


SILL DETAIL "C"

Scale 3" = 1'-0"



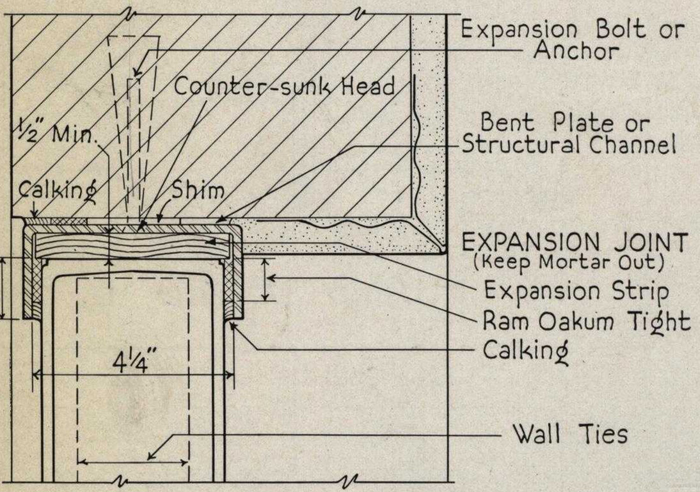
HEAD DETAIL "A"



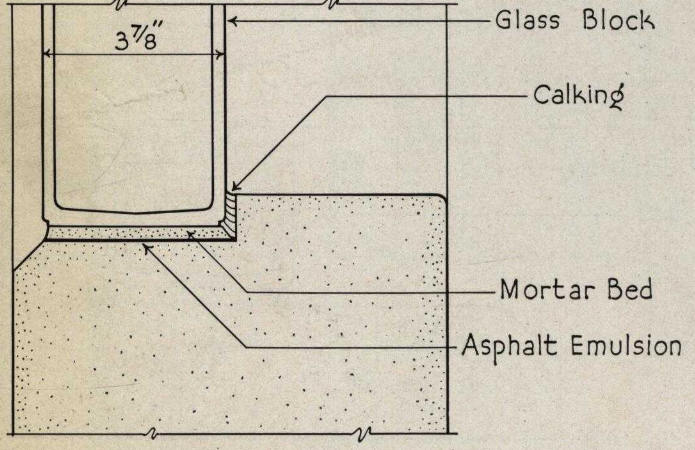
PANELS IN METAL FRAMES OR 8" MASONRY WALLS

These details are typical for INSULUX panels when it is not practical to set them in a masonry chase at the jambs (as shown on page 13) or when installing them in an 8 inch masonry wall. This construction will also permit a variation in the depth of the opening reveal. Due to the regularity of the "chase" or recess formed by metal shapes, the block may be set into these frames a minimum of 1 inch at the jambs (as compared to a minimum of 1½ inches in masonry). This will permit the proper wedging action of rammed oakum to support the panel against wind pressure. **Metal frames are to be designed so that no bolt or rivet heads, clip angles or other obstructions project into the expansion joints.**

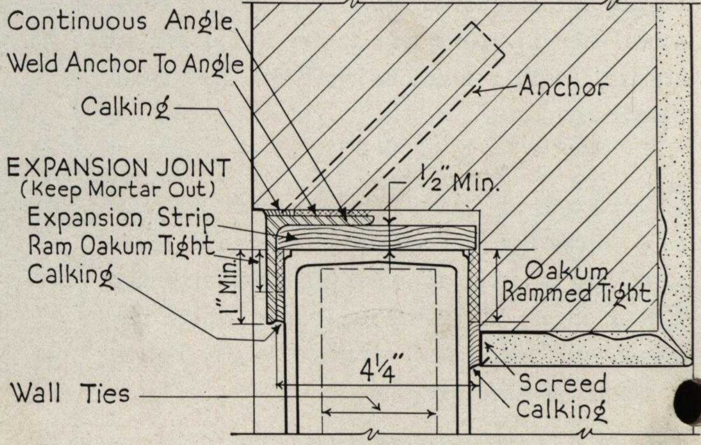
IMPORTANT.. For panels larger than 144 sq. ft. in area, longer than 25 lineal ft. or higher than 20 lineal ft., see reinforcing details on pages 15 and 16.



JAMB DETAIL "B"



SILL DETAIL "C"
Scale 3" = 1'-0"

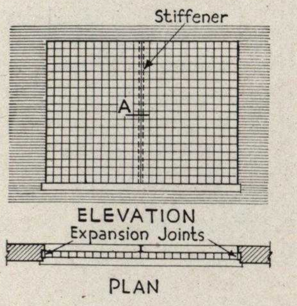


ALTERNATE JAMB "B"
Scale 3" = 1'-0"

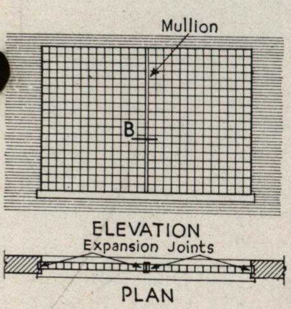
INTERMEDIATE REINFORCING FOR LONG PANELS

Long INSULUX panels are either to be braced by intermediate structural stiffeners and/or are to be sub-divided by mullions, according to the limitations noted below.

Design members for proper stiffness. **Connections (clip angles, bolts or rivets) are under no condition to project into expansion joints.**

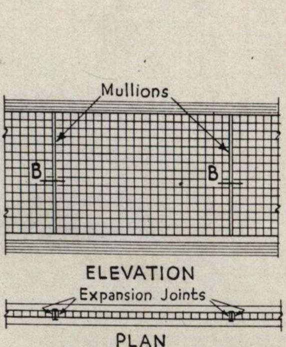


STIFFENERS—Panels more than 144 sq. ft. but less than 250 sq. ft. in area and not more than 25′-0″ in length are to be braced by and anchored by structural stiffeners. (See Detail A.)

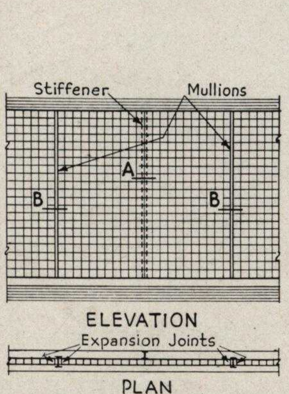


MULLIONS—Panels more than 25′-0″ in length or more than 250 sq. ft. are to be sub-divided by mullions instead of stiffeners. H type mullion sections (See Details) furnish "chase" design into which the panel edges are set and permit expansion and support against wind pressure. If areas between mullions exceed 144 sq. ft., these areas are to be further braced by vertical stiffeners.

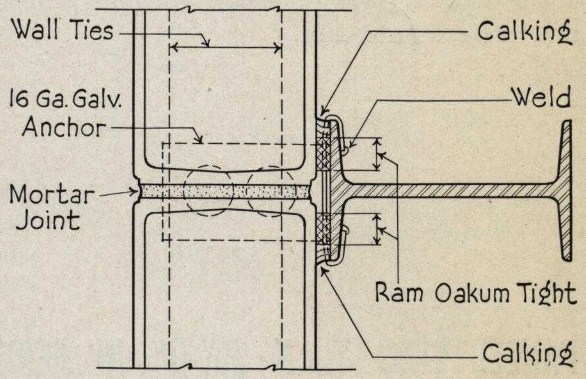
CONTINUOUS PANELS—Continuous panels (Sketch 1) are to be subdivided into areas not greater than 250 sq. ft. by mullions (Detail B) spaced not more than 25′-0″ apart. When these divisions (see Sketch 2) exceed 144 sq. ft. in area they are to be further braced by structural stiffeners (Detail A) at intermediate points.



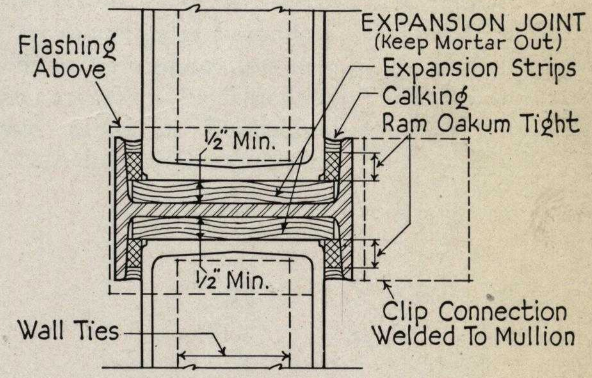
CONTINUOUS PANELS
(SKETCH 1)



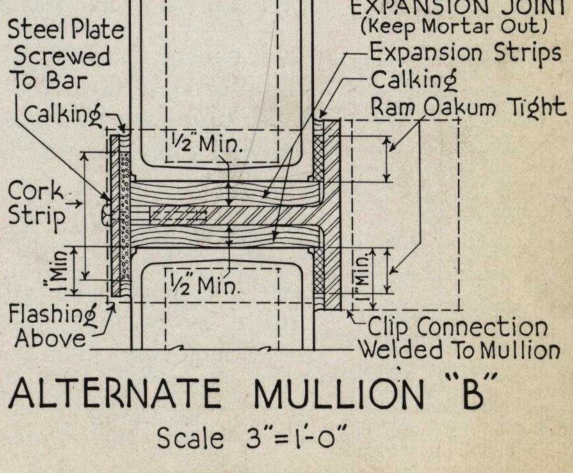
LARGE CONTINUOUS PANELS
(SKETCH 2)



STIFFENER DETAIL "A"



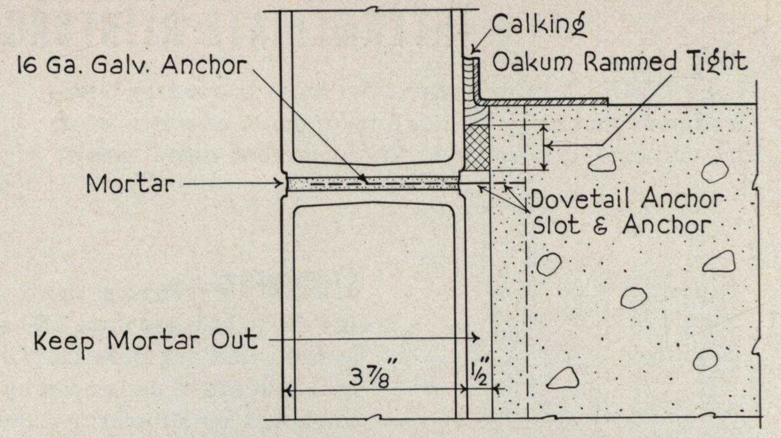
MULLION DETAIL "B"



ALTERNATE MULLION "B"
Scale 3″=1′-0″

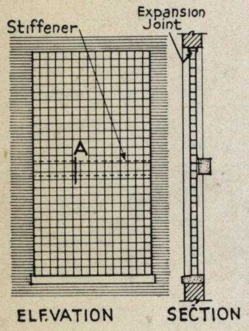
INTERMEDIATE REINFORCING FOR TALL PANELS

High panels are either to be braced by intermediate stiffeners (or spandrels) or are to be sub-divided by shelf angles according to the limitations noted below.

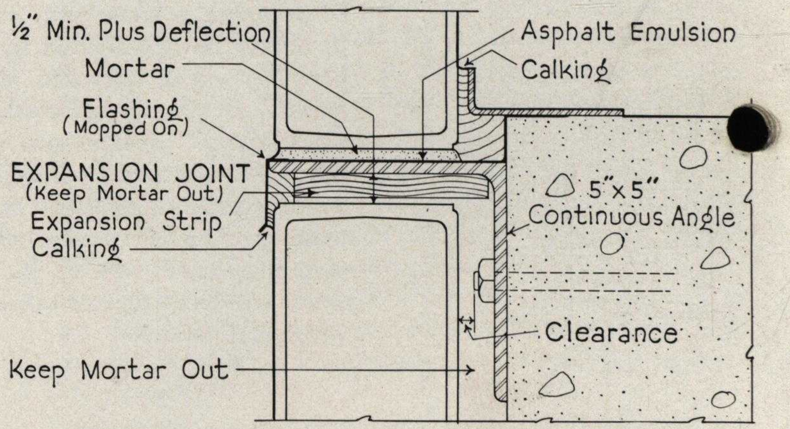


STIFFENER DETAIL "A"

PANELS LESS THAN 20'-0" IN HEIGHT

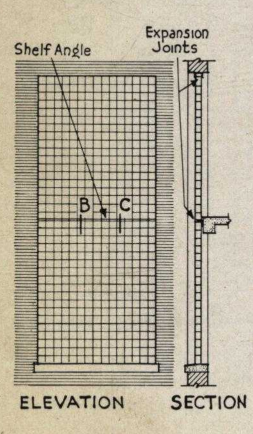


Panels more than 144 sq. ft. but less than 250 sq. ft. in area are to be braced and anchored to stiffeners by 16 ga. gal. perforated anchors fastened to stiffeners and embedded in glass block mortar joints (Detail A).



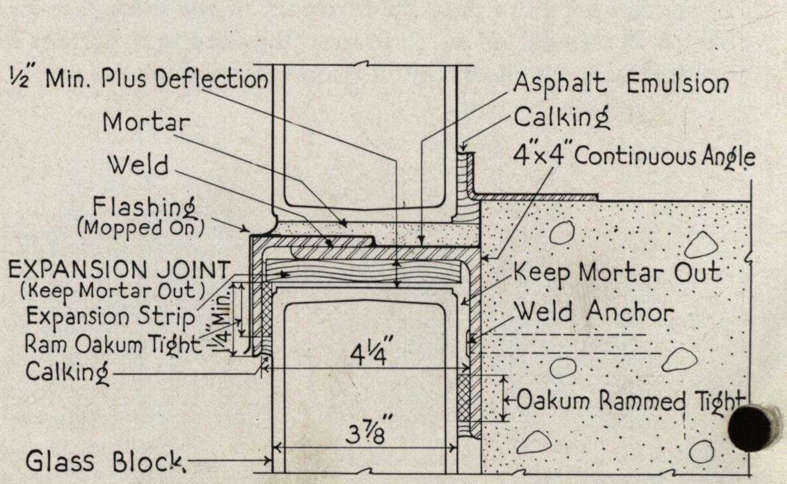
SHELF ANGLE DETAIL "B"

PANELS MORE THAN 20'-0" IN HEIGHT



Panels more than 20'-0" in height or more than 250 sq. ft. in area are to be sub-divided by shelf angles. (See Detail B.)

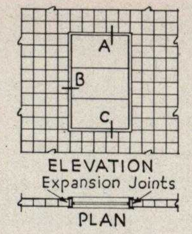
If areas between shelf angles exceed 144 sq. ft., these areas are to be further braced by vertical or horizontal stiffeners. (See Detail A.) If panels are wider than ten feet, use Detail C.



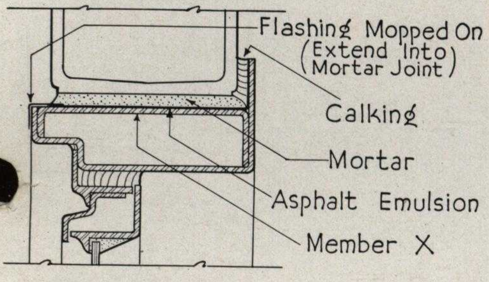
SHELF ANGLE DETAIL "C"
Scale 3"=1'-0"

METAL WINDOW FRAMES IN INSULUX PANELS

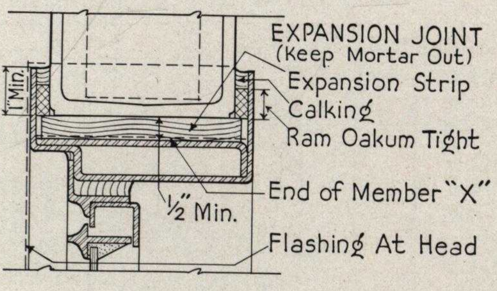
When ventilation or vision is required in outside walls, sash may be installed in INSULUX panels. Two typical methods for designing this combination of sash and block are detailed below. **The required sub-frames for steel sash are to be designed so that no bolts, rivets or clip angles occur in expansion joints.** Where fire department means of access is required by the Building Codes, any form of window (minimum size 32″ wide and 48″ high) that is manually operated or fixed may be used.



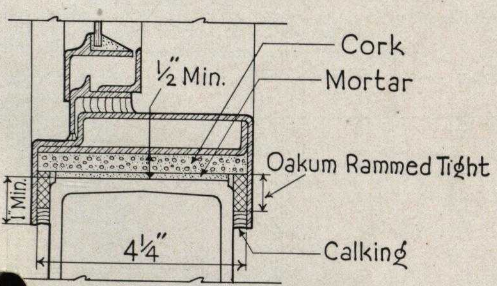
METHOD 1—This method provides a means of installing one or more isolated sash (not connected to building structure) in panels not exceeding 144 sq. ft. in area. Each sash should not exceed 15 sq. ft. nor their total area exceed 20 per cent of the panel area. (See Details A, B, C.)



HEAD DETAIL "A"

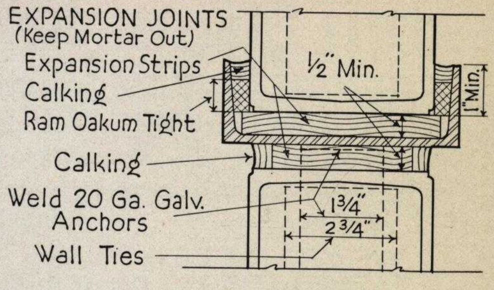


JAMB DETAIL "B"

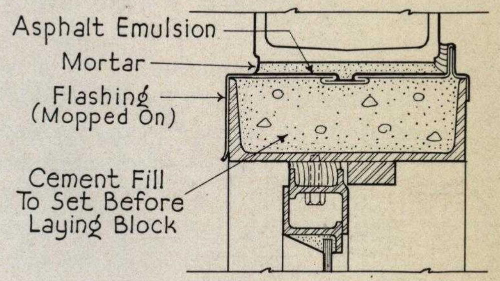


SILL DETAIL "C"

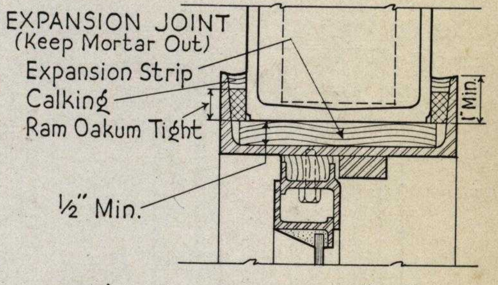
PRESSED METAL WINDOW FRAMES
Scale 3″=1′-0″



SECTION "D"

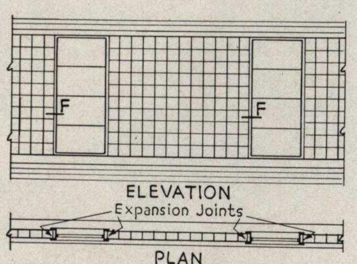


HEAD DETAIL "E"

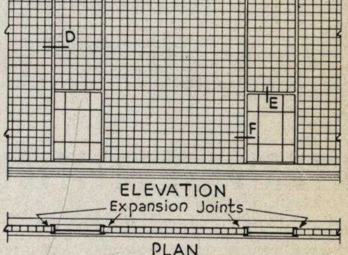


JAMB DETAIL "F"

STRUCTURAL CHANNEL WINDOW FRAMES
Scale 3″=1′-0″

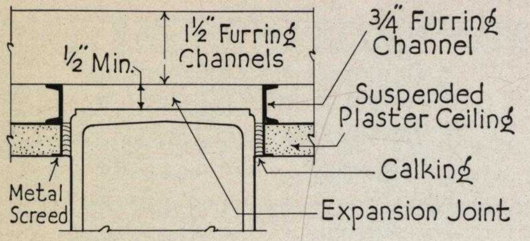


(SKETCH 1)

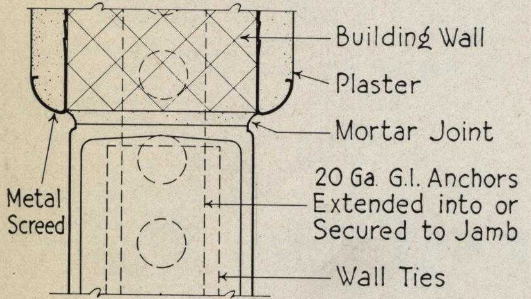


(SKETCH 2)

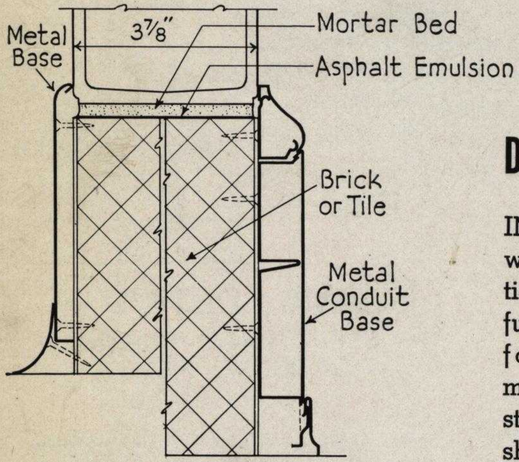
METHOD 2—When window areas exceed the sizes shown in Method 1, window sub-frames are to be anchored directly to the building structure. Sketch 1 and Sketch 2 show two different methods which may be used for this type of construction. The structural shapes shown in details D, E, and F act not only as sub-frames for the sash but furnish intermediate reinforcing and expansion joints for large or continuous panels.



HEAD DETAIL



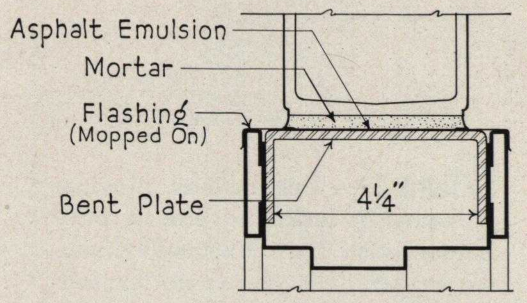
JAMB DETAIL



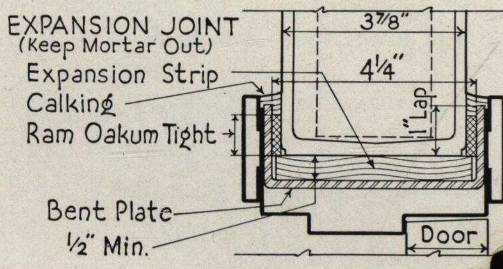
*BASE DETAIL
Scale 3"=1'-0"

DETAILS OF EXTERIOR METAL DOOR FRAMES

All door frames are to be securely anchored to the building structure at the sills. For large doors or doors subjected to rough usage, extend channel frames and anchor them to the building structure.



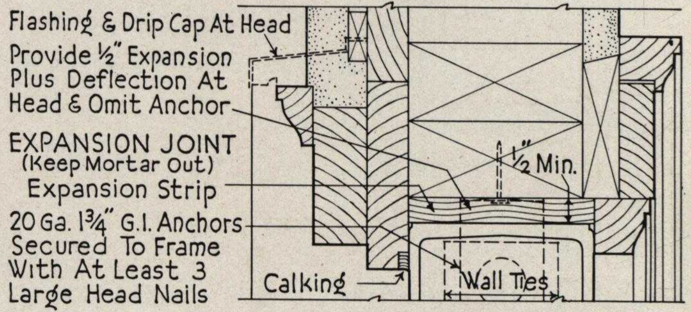
DOOR HEAD



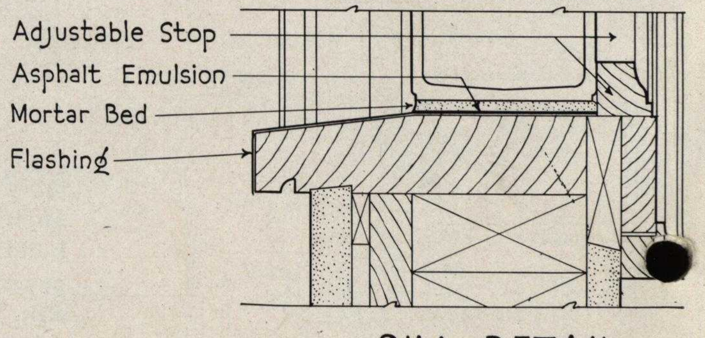
DOOR JAMB

DETAILS OF PANELS IN WOOD FRAME CONSTRUCTION

INSULUX panels in wood frame construction conform to the fundamentals shown for masonry and metal frame construction. Wood sills should be covered with metal flashing and painted with asphalt emulsion before laying block. See Sill Detail.


Flashing & Drip Cap At Head
Provide ½" Expansion Plus Deflection At Head & Omit Anchor
EXPANSION JOINT (Keep Mortar Out)
Expansion Strip
20 Ga. 1¾" G.I. Anchors Secured To Frame With At Least 3 Large Head Nails
Calking
½ Min.
Wall Ties

JAMB DETAIL
HEAD SIMILAR AS NOTED



SILL DETAIL
Scale 3"=1'-0"

INTERIOR PARTITIONS

Expansion joints are to be provided at the heads of all INSULUX Glass Block partitions. Expansion joints are to be used at jambs in buildings where unusual structural movements may be expected.

Limiting sizes of panels for interior partitions may be increased to 200 sq. ft. in area without intermediate bracing, providing adequate anchorage for the panel is obtained at jambs and head.

***Base details show two alternate methods.**

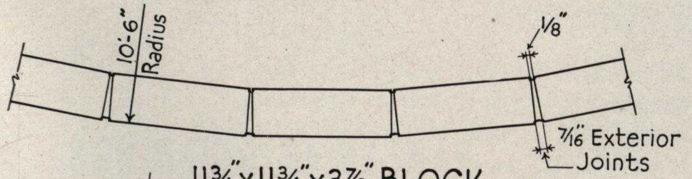
OWENS-ILLINOIS
INSULUX
GLASS BLOCK

CONSTRUCTION DETAILS

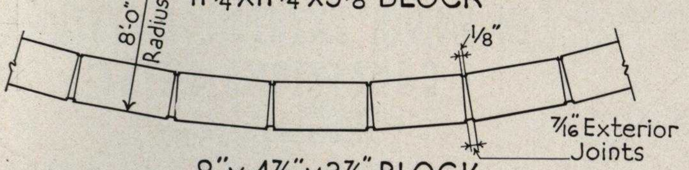
MIN. LAYING RADII
ALTERNATE DETAILS
FOR SMALL PANELS

MINIMUM LAYING RADII FOR STANDARD BLOCK

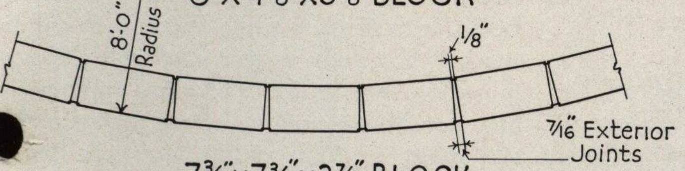
Standard INSULUX block can be laid on a variety of radii by varying the mortar joint thicknesses. Special radial block are for small radii and are available only in 317-R and 301-R



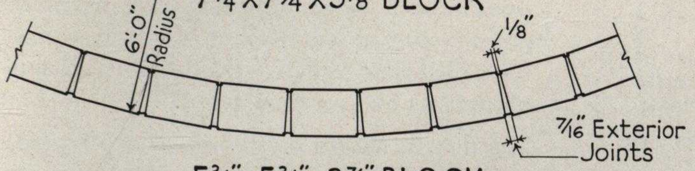
11¾"x11¾"x3⅞" BLOCK



8"x4⅞"x3⅞" BLOCK



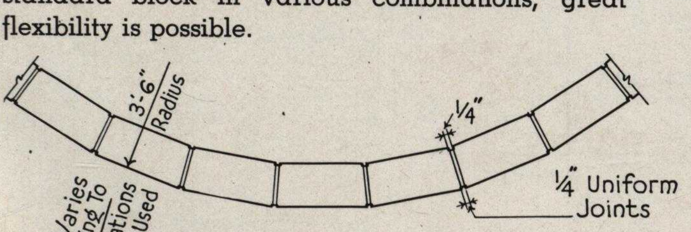
7¾"x7¾"x3⅞" BLOCK



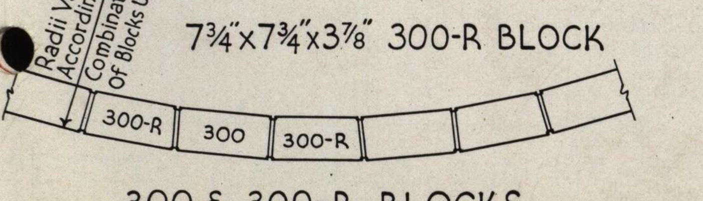
5¾"x5¾"x3⅞" BLOCK

LAYING RADII FOR RADIAL BLOCK

Special radial block are available in the 300 Series (outside face size 7¾" x 7¾") in two designs—317-R and 301-R. These block will permit the laying of smaller radii than standard block. The minimum laying radius for this block (maintaining 7/16" outside joint) is 2'-6". By combining radial block and standard block in various combinations, great flexibility is possible.



7¾"x7¾"x3⅞" 300-R BLOCK



300 & 300-R BLOCKS

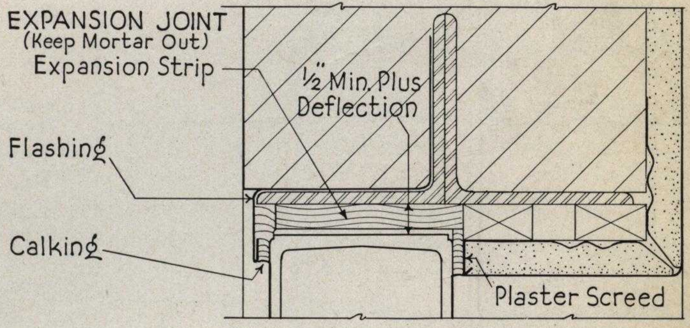
ALTERNATE DETAILS FOR SMALL PANELS

These details are only to be used when it is impractical to use "chase" construction. They should never be used for panels larger than *100 sq. ft. in area or more than 10'-0" in height* or for any panels having severe exposures such as in tall buildings.

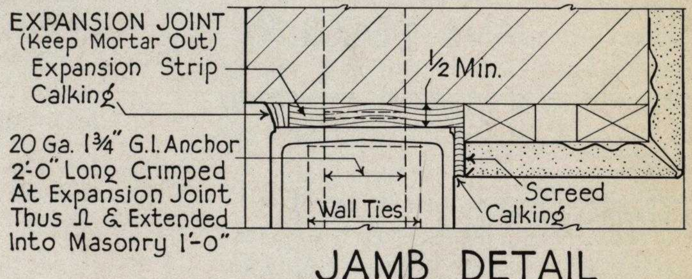
HEAD—The heads of all panels should be flashed and when panels exceed 10'-0" in length use interior and exterior stop angles. (See Detail A, page 14.)

JAMB—Anchors are to be crimped to provide for expansion and contraction of panels. **It is extremely important that mortar does not lodge in expansion joints by building up around anchors.**

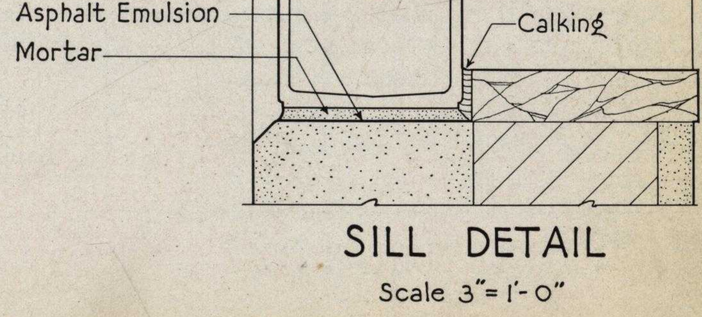
NOTE—Expanded metal wall ties are not to be used as anchors. See specifications.



HEAD DETAIL

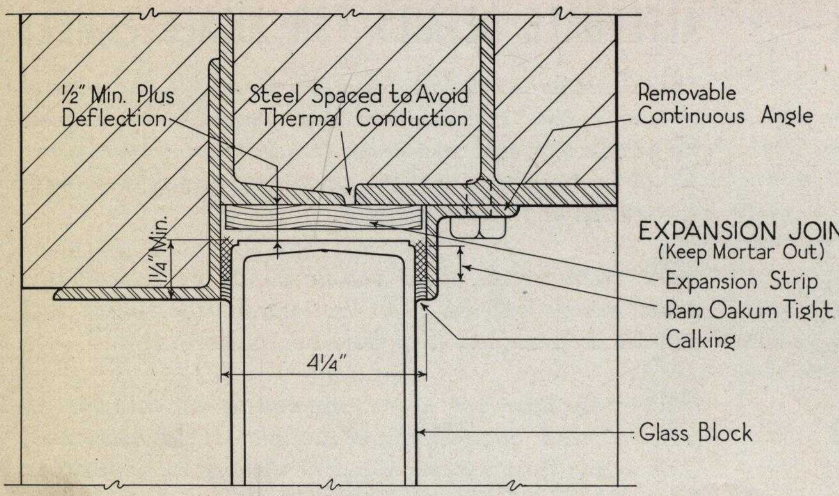

EXPANSION JOINT (Keep Mortar Out)
Expansion Strip
Calking
½ Min.
20 Ga. 1¾" G.I. Anchor 2'-0" Long Crimped At Expansion Joint Thus ∩ & Extended Into Masonry 1'-0"
Wall Ties
Screed
Calking

JAMB DETAIL

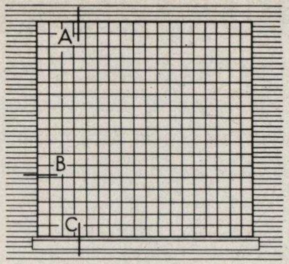


SILL DETAIL

Scale 3"= 1'-0"


½" Min. Plus Deflection
Steel Spaced to Avoid Thermal Conduction
Removable Continuous Angle
1¼" Min.
EXPANSION JOINT (Keep Mortar Out)
Expansion Strip
Ram Oakum Tight
Calking
4¼"
Glass Block

HEAD DETAIL "A"



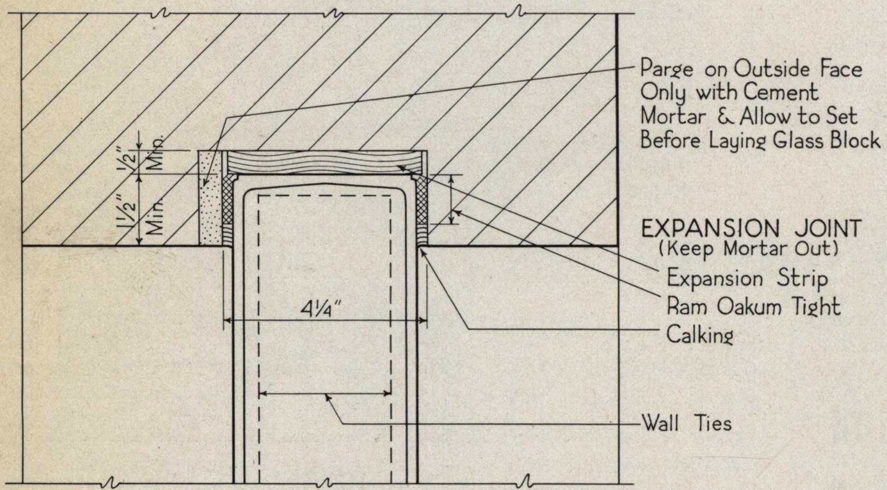
ELEVATION

PANELS IN BUILDINGS IN WHICH EXTREME MOISTURE CONDITIONS EXIST

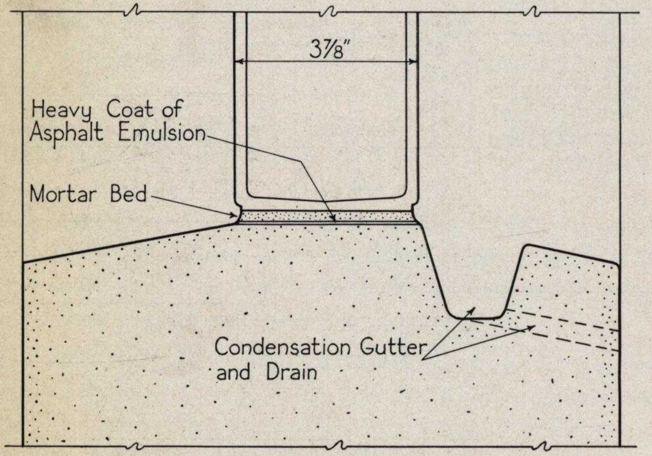
(New Buildings)

Because of the particular ability of INSULUX Glass Block to withstand severe conditions, it has been widely used in buildings in which severe acid, alkaline and moisture conditions exist, (such as paper mills, silk mills, packing plants, etc.). In those buildings in which unusual high moisture conditions are maintained, certain variations to standard INSULUX details and specifications are recommended.

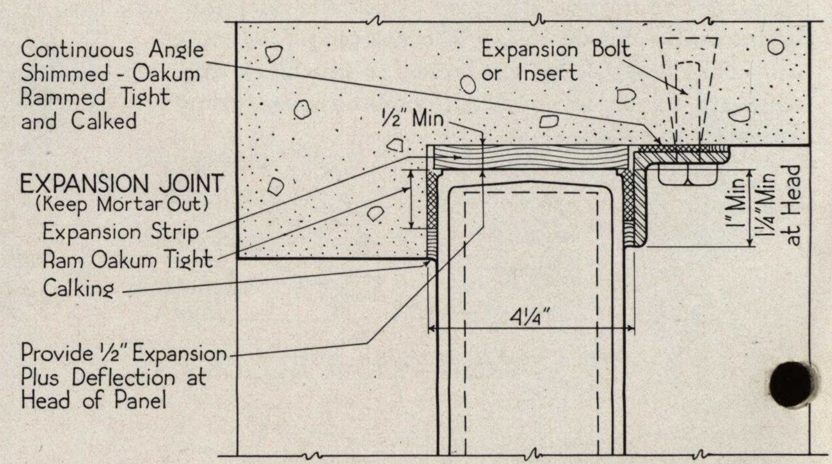
The details shown on this sheet are typical methods for installing glass block panels in new buildings of this type. It will be noted that through steel is avoided and that a wash is provided for the sill on the interior of the building. (For further details and specific instructions for the installation of this panel, see page 21.)


Parge on Outside Face Only with Cement Mortar & Allow to Set Before Laying Glass Block
½" Min.
1½" Min.
EXPANSION JOINT (Keep Mortar Out)
Expansion Strip
Ram Oakum Tight
Calking
4¼"
Wall Ties

JAMB DETAIL "B"



SILL DETAIL "C"
Scale 3"=1'-0"


Continuous Angle Shimmed - Oakum Rammed Tight and Calked
Expansion Bolt or Insert
½" Min
EXPANSION JOINT (Keep Mortar Out)
Expansion Strip
Ram Oakum Tight
Calking
1" Min
1¼" Min at Head
4¼"
Provide ½" Expansion Plus Deflection at Head of Panel

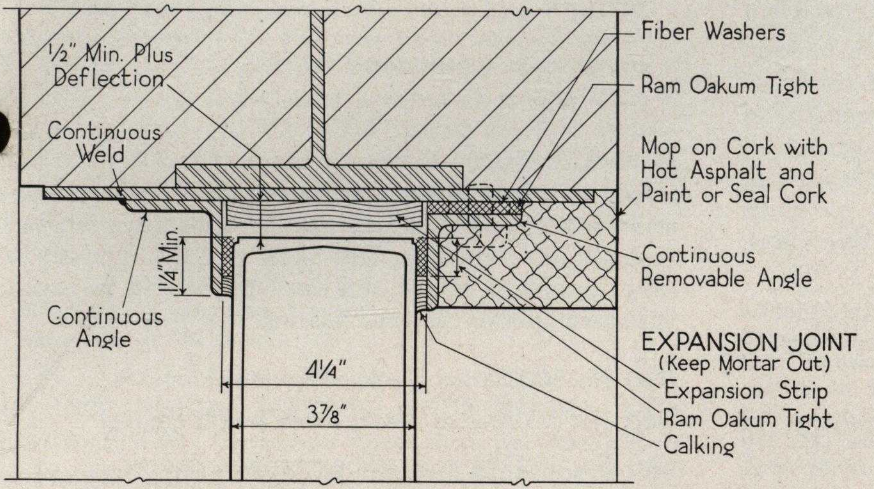
JAMB DETAIL FOR CONCRETE
HEAD SIMILAR AS NOTED

PANELS IN BUILDINGS IN WHICH EXTREME MOISTURE CONDITIONS EXIST

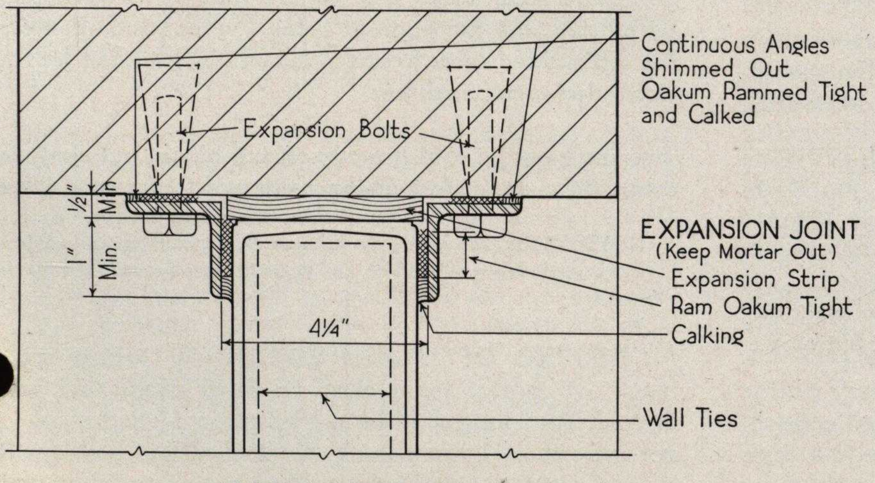
(Remodeling of Existing Buildings)

Details on this sheet are typical for the installation of glass block panels in buildings in which extreme moisture conditions exist. They apply particularly to existing buildings in which windows are to be replaced by glass block panels. The principles on this sheet and page 20 should be followed for all glass block panels installed in buildings where these conditions exist, regardless of the size of the panel.

The following are important in the installation of such panels:



HEAD DETAIL


Continuous Angles Shimmed Out Oakum Rammed Tight and Calked
Expansion Bolts
½" Min.
1" Min.
4¼"
EXPANSION JOINT (Keep Mortar Out)
Expansion Strip
Ram Oakum Tight
Calking
Wall Ties

JAMB DETAIL
Scale 3"=1'-0"

1. Panels should never be more than 144 sq. ft. in area without being broken by intermediate expansion joints.

2. Panels should never be greater in extent than 20 lin. ft. in any one direction.

3. Jambs and heads of all panels must be set into a chase or recess.

4. Through metal shapes should be avoided unless these shapes are insulated.

5. Sills should be designed with an interior wash and/or gutter.

6. Particular care should be taken to spread a heavy coat of asphalt emulsion over the entire sill to be covered by the first mortar joint.

7. In laying the glass block, it is important that a good quality dense mortar be used and that the mortar joints be completely and evenly filled. The exterior surfaces of these joints, particularly on the interior of the building, should be tooled to a smooth finish.

8. Particular care should be taken with the mortar mix to obtain a dense, workable mortar. Write Owens-Illinois Glass Company for exact mortar specifications and sand sieve analysis.

BASIC SPECIFICATIONS

NOTE: *Notes are explanatory or advisory only and should not be included in the specifications.*

NOTE: *Select and include only those clauses which apply to the particular work. Words in bracketed bold face type are selective.*

NOTE: *Specific variations from these specifications are required for Fire Retardant panels (See page 27).*

Panels erected under the jurisdiction of the Pacific Coast Building Officials Conference (Available upon request).

Panels subject to severe moisture conditions within buildings (See pages 20 and 21).

(1) **GLASS BLOCK**—Glass Block shown on the drawings or called for in these specifications shall be hollow, partially evacuated, water-clear units of pressed glass as manufactured by Owens-Illinois Glass Company. All mortar-bearing surfaces of the block shall be uniform and shall be precoated with an alkali and moisture-resistant, grit-bearing material. The face dimensions of the glass block shall be as shown on the drawings. All blocks shall be 3⅞ inches thick with a tolerance of 1/16 inch plus or minus. The face design of the block shall be as designated, by number, on the drawings.

NOTE: *Insulux Glass Block are light transmitting building units with a flat mortar bearing surface. This mortar bearing surface is covered with a grit-bearing bond material that insures adhesive and shear values at the mortar joint. Face designs are designated by number, as illustrated on pages 8 and 9. Face dimensions of standard block are (4⅞″x8″) (5¾″x5¾″) (7¾″x7¾″) (11¾″x11¾″) with a tolerance of 1/16 inch plus or minus.*

(2) MORTAR—MATERIALS AND MIXING—

(2a) **Cement**—All cement used in the mortar shall be waterproof Portland cement, complying with the specifications of the American Society for Testing Materials.

(2b) **Lime**—Lime shall be high calcium, either hydrated or well slaked quick lime. Quick lime shall be slaked in a watertight box, using sufficient water to prevent burning. During the slaking, it shall be hoed thoroughly. All slaked lime shall be aged for at least seven days before using. All hydrated lime shall meet the standard specification of the American Society for Testing Materials.

(2c) **Sand**—The aggregate for use in masonry mortar shall consist of finely graded material composed of hard, strong, durable, mineral particles which are free from injurious amounts of saline, alkaline, organic, or other deleterious substances. 100 per cent of this aggregate shall pass a No. 16 sieve, and all shall be uniformly graded from fine to coarse to form a dense mixture when incoporated in the mortar.

NOTE: *The proper grading of sand becomes increasingly important for panels subjected to severe moisture conditions (See page 21).*

(2d) **Mixing**—The materials used in the mortar shall be measured by volume. The mortar shall be composed of one part cement, one part lime, and four parts sand, mixed in a watertight box and hoed from end to end until thoroughly incorporated. Consistency shall be such that the hoe is clean when withdrawn from the mortar, the resulting mixture being drier than that used for ordinary brick work.

NOTE: *Prepared masonry mortars of high strength and low volume change, mixed according to manufacturer's directions may be substituted if desired.*

See page 21 for other variation in mortar mix.

(3) **WALL TIES**—Horizontal mortar joints shall be reinforced with flat rolled ¾ inch mesh 20-gauge expanded metal wall ties, 2¾ inches wide by 8 feet long, hot galvanized after forming. Ties shall run continuously by lapping ends 6 inches and shall be located in certain horizontal mortar joints as follows:

(3a) No. 100 Series Block, every fourth course.

(3b) No. 200 Series Block, every fourth course.

(3c) No. 300 Series Block, every third course.

(3d) No. 400 Series Block, every course.

Upon approval of the architect, alternate wall ties of 20-gauge steel strips, 1¾ inches wide by 6 feet long, perforated with rectangular holes, 1⅝ inches on centers, hot galvanized after forming, may be substituted for the expanded metal wall ties.

Ties shall not be laid directly on the block, but shall be completely embedded in the center of the mortar joint.

NOTE: *Wall Ties reinforce horizontal mortar joints against wind pressure and reduce the possibility of cracked mortar joints.*

(4) **LAYING OF GLASS BLOCK**—In laying glass block, all mortar joints shall be filled completely with mortar. The joints shall be not less than ¼ inch thick or not more than ⅜ inch thick. Block shall not be hit with a metal tool, but laid by the method known as "shoving," (working into place with the hands) thereby compressing

the vertical joints. After the mortar has passed its initial set, the exposed edges of the joint shall be tooled and thoroughly compressed with a round jointer. The finished surface of the joint shall be slightly concave, smooth and compact. The final cleaning shall not be done until after the mortar has reached its final set.

If blocks are in any way disturbed after laying, during the plumbing, tooling, or cleaning process, such blocks shall be removed and relaid.

NOTE: *The design of the mortar-bearing surface of Insulux Glass Blocks makes possible a constant mortar joint thickness. A joint not less than ¼ inch or not more than ⅜ inches thick is more desirable than a thicker joint because it has less initial shrinkage and less contraction and expansion due to thermal change and moisture pick-up in the finished panel.*

(5) SILLS—Sills are to be designed as shown on the drawing. They are to be coated with a heavy coat of asphalt emulsion (1/32″ thick) before the first mortar joint is laid. Care should be taken in applying the emulsion to see that it covers the entire bed upon which the panel will rest. Allow emulsion to dry before spreading the mortar joint.

NOTE: *It is advisable to protect asphalt emulsion from rain until it has dried.*

(6) EXPANSION JOINTS, ANCHORAGE AND PANEL SIZES—Expansion joints shall be provided at the junction of glass block and all other materials (heads, jambs, shelf angles, window and door frames) except at the sill. They shall be formed by setting the edges of the panel into a "chase" or recess at heads and jambs, constructed as shown on the drawings. Large panels shall have intermediate expansion joints and shall be reinforced as shown on the drawings.

NOTE: *Insulux Glass Block is not a load-bearing material and lintels are required above all panels. Expansion joints at heads and jambs are to be designed to support the panel against wind pressure (inward and outward) and yet cushion the edges of the panel from direct contact with the building structure (see details page 14). Large panels (more than 144 sq. ft. but less than 250 sq. ft. in area, and not more than 20 ft. in height or more than 25 ft. in length) are to be braced by structural stiffening members (see details, page 15). Panels more than 250 sq. ft. in area or more than 20 ft. in height or more than 25 ft. in length are to be sub-divided by mullions or shelf angles designed to allow for intermediate expansion and to resist wind pressure (see details, page 15). If areas between mullions or shelf angles exceed 144 sq. ft. they are to be further braced by stiffeners.*

The back of all "chases" or recesses (heads, jambs, mullions, etc.) shall be lined with Owens-Illinois INSULUX Expansion Joint Strips—½ inches thick x 4⅛ inches wide x 25 inches long, or approved equal. Ends of strips shall be butted together to form a continuous cushion around the edges of the panel. They shall be installed before the block is laid and shall be held in place by an adhesive such as asphalt emulsion. After the panels have been laid and the mortar has set, ram non-staining oakum between the sides of the block and the sides of the "chase." Ram oakum back ⅜ inch from the finished surface. Fill recess thus formed with a non-hardening waterproof calking material to a depth of not less than ⅜ inch.

NOTE: *Insulux Expansion Joint Strips are designed to keep the edges of the panels from coming into direct contact with the building structure and to eliminate the possibility of mortar gobs lodging in this expansion joint.*

They must be so installed that they form a continuous cushion completely protecting the panel edges. One-half inch in thickness at jambs is sufficient for most buildings, but should be increased if excessive structural movement of the building may be expected due to light construction or extreme length. Additional clearance between the bottom of the strip and the top of the panel at the head is to be provided to take care of lintel deflection where necessary. Oakum must be rammed at the sides of the block and wedged tightly in order to support the panel against inward and outward wind pressure.

(7) ALTERNATE—(Expansion Joints and Anchorage). Expansion joints and anchorage may be provided for small panels as shown on the drawings. INSULUX Strips or equal shall be fastened to head and jambs. Standard INSULUX expansion strips 4⅛ inches wide, are to be cut into strips approximately 2 inches wide and are to center on the edges of the panel forming a continuous cushion. The panels shall be anchored at the jambs by 20-gauge perforated steel strips, hot galvanized after forming, 1¾ x 24 inches embedded in masonry and extended into horizontal glass block mortar joints. These shall be located as frequently as wall ties and shall be crimped at expansion joints. After panel has been laid remove all mortar which has lodged in expansion joints particularly at points where anchors are located. Point expansion joints with gun-grade waterproof calking material to a depth of at least ½ inch.

NOTE: *These details (Alternate 7) are not to be used for panels more than 100 sq. ft. or more than 10 ft. in height nor for any panel subjected to severe winds nor for panels subjected to conditions as shown on pages 15 and 16.*

TEST DATA AND
TECHNICAL
INFORMATION

TECHNICAL DATA

OWENS-ILLINOIS
INSULUX
GLASS BLOCK

THERMAL INSULATION

Tests run over the past few years by a number of nationally recognized laboratories have proved that glass block panels have a very high insulation value when compared with other types of light transmitting materials.

The above mentioned tests have been confirmed by official tests conducted by the Pittsburgh Testing Laboratory and run according to the tentative test code of the A. S. H. & V. E., technical advisory committee on air conditioning requirements of glass, which gives the value for the overall coefficient of heat transfer U = 0.40 — 0.43 for panels constructed of 8-inch glass block in the standard recommended manner. The values are for still air conditions and vary over the range noted due to block design differences. Using accepted film coefficients the average value for 15-mile-per-hour wind is 0.49.

Tests run by other laboratories show that there is practically no difference in the Thermal insulation of blocks of various sizes. Consequently the figure of 0.49 is recommended for panel use when computing heat loss for blocks of all sizes and face designs.

SURFACE CONDENSATION

Due to the high insulating value of Insulux Glass Block, condensation will not start forming on the inside surface of the glass block panel until the outside air has reached a temperature much lower than that which produces condensation on a single glazed window.

With inside air at 70° F and relative humidity of 40%, the following outside temperatures with a 15-mile-per-hour wind are required to start the formation of interior surface condensation.

Insulux —14° F	**Steel Sash** + 33° F

For information regarding the outside temperature that will cause condensation to appear on the inside surface of Insulux Glass Block subjected to other interior temperatures and humidities, consult Owens-Illinois Glass Company.

LIGHT TRANSMISSION

The percentage of light transmission through the faces of individual Insulux Glass Block units has been determined by two slightly different methods. Based on this data the average light transmission through the faces of Designs 1, 2, 7, 11, 16 and 17 is approximately 80%. Other block face designs are available which transmit a greater or lesser percentage of light than those listed above and which have special solar heat retarding and unique light diffusing properties. (See pages 10 and 11.)

A specially designed light testing house has been constructed for the purpose of accumulating information relative to the intensity and distribution of daylight illumination at the working plane through various Insulux Glass Block panels. Data from this practical test program will be of great value to building designers. Write Owens-Illinois Glass Company for your free copy of the latest bulletin.

SOLAR HEAT TRANSMISSION

An extensive series of studies to determine the total solar heat gain through glass block panels has just been concluded. Results will be published later in a complete form. Included is the determination of the solar heat gain for various exposures of glass block panels of different designs. As indicative of the information that will be included in the final report, we give herewith a brief outline of the data taken for one type of block mounted with southern exposure.

In the following table Column B gives the total heat gain in B.t.u. per sq. ft. per hour through a smooth-faced* glass block panel facing south at a 40 degree latitude on a bright sunny day, about August 1 when a maximum outside shade temperature reached 95 degrees F, and the inside air temperature was maintained at 78 degrees F. During the period of solar impingement on the wall, the total solar heat gain is approximately 31% of the total incident solar radiation.

Column C gives the direct solar radiation transmittance through the panel in B.t.u. per sq. ft. per hour for the same day. These values vary from 18% to 20% of the total radiation incident on the outside of the glass.

The air to air transmittance coefficient for the glass block panel when solar radiation is not a factor is 0.40 B.t.u. per sq. ft. per hour per degree F temperature difference for still air and 0.49 B.t.u. per sq. ft. per hour per degree F temperature difference for a 15-mile wind velocity outside.

HEAT GAIN THROUGH THE GLASS BLOCK PANEL
B.t.u. per sq. ft. per hr.

A	B	C
Local Sun Time	Solar Radiation and Air to Air Transmittance	Direct Solar Radiation
8–9	8.0	9.0
9–10	16.5	13.5
10–11	27.0	19.0
11–12 A.M.	35.0	24.5
12–1 P.M.	42.0	25.0
1–2	46.0	23.0
2–3	46.5	19.0
3–4	42.0	14.0
4–5	33.0	8.0
5–6	24.0	4.0
6–7	17.0	1.6
7–8	10.0	0.5
8–9	5.0	0.0

For more complete information on the solar heat transmission throu glass blocks consult the 1940 Guide of the American Society of Hea ing & Ventilating Engineers.

*Ribbed face block constructions give somewhat lower solar radiation effects.

SOUND INSULATION

Tests conducted on glass block panels by a nationally known laboratory show that glass block has the sound reducing ability equal to or better than that of a commonly used non-light transmitting partition having equal weight per unit surface area. These tests show an average sound reduction factor over a range of nine frequencies of 40.7 decibels for glass blocks.

COMPRESSION STRENGTH

While Insulux Glass Block have an extremely high compressive strength they are not recommended for use as a load bearing material. Repeated tests show that the crushing strength of glass block panels is well above that of accepted masonry construction. Repeated tests made on wallettes laid up with Insulux Glass Blocks show a panel compressive strength of 400 to 600 lb. per sq. in. of gross loaded area.

BOND STRENGTHS

All mortar edges of Insulux Glass Blocks have a special grit-bearing moisture-and-alkaline resisting white coating. This insures a complete and permanent bond between the glass and the mortar and assures a panel construction with high wind resistance, and watertightness.

WIND PRESSURE TESTS

An Insulux Glass Block panel 7′3″ wide by 8′8″ high was built a Purdue University following specifications of Owens-Illinois Gl Company. This panel was tested by repeated applications of a pressure over one entire face. Pressure was applied and released intermittently for 100 cycles at each of the pressures of 20, 30, 40, 50 and 60 lbs. per sq. ft.

Results of this test show that the panel is entirely elastic under repeated loadings with a pressure of 40 lbs. per sq. ft., which corresponds to a wind velocity of about 115 miles per hour.*

TECHNICAL DATA

FIRE AND COMPRESSION TESTS

The panel withstood 50 cycles of pressure at 60 lbs. per sq. ft. before any minute permanent set was detected. After 100 cycles at 60-lbs. pressure, visible checking of the mortar joints occurred. This pressure corresponds to a wind velocity of 141 miles per hour.*

Final failure of the panel occurred with a pressure of 91 lbs. per sq. ft. which corresponds to a wind velocity of 174 miles per hour.* Failure occurred in the mortar joints due to shear. The blocks were undamanged. (See elasticity chart at bottom of this page.)

Attention is called to the fact that the above panel test was given a 500 cycle treatment. Panels uniformly and gradually loaded for one cycle will withstand considerably higher pressures than those given above. The above data was collected under conditions believed to simulate a tropical storm.

*Derived from Formula $P = .003V^2$.

FIRE TEST

Insulux Glass Block panels laid up in standard specification mortar and provided with specification bond ties have been subjected to both fire tests and fire and hose stream tests.

The panels were all rectangular but of varying dimensions in accordance with the requirement of the specifications of the particular test being conducted. The test furnaces were designed either according to the practice of the Underwriters' Laboratories and of the National Bureau of Standards, Department of Commerce, or of the New York State Department of Labor. The former were suitable for a test panel of approximately 120 sq. ft. in area and the latter for [illegible]ical window sizes.

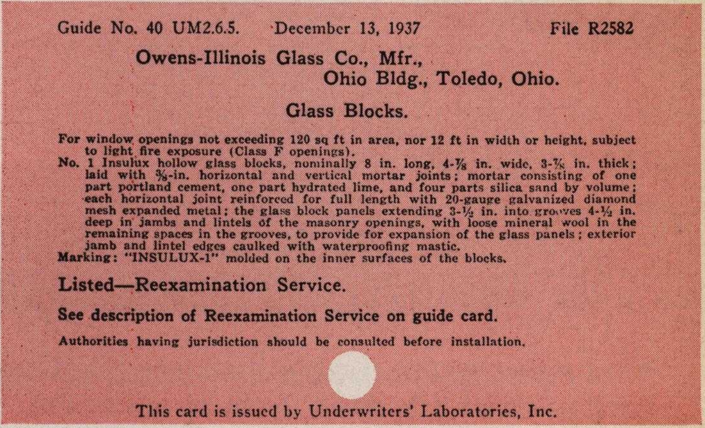
[illegible]o time-temperature curves were followed in the tests, either that of the American Society for Testing Materials, or the New York State Department of Labor.

WATER TIGHTNESS

Purdue University has conducted tests which prove that Insulux Glass Block Panels when subjected to cycles of wind-driven (15-miles-per-hour) water spray followed by spray without wind, are capable of withstanding severe conditions of storm exposure without penetration. The watertightness of any masonry is dependent upon the proper workmanship used in joining the individual units. It is essential to obtain full joints without voids, together with proper tooling.

Water penetration and vapor penetration through mortars are not synonymous terms. In buildings where high humidity conditions will be found it is essential that minimum vapor penetration of the mortar be achieved. (See details for high humidity installations pages 20 and 21.) The Owens-Illinois Glass Company has sponsored a study of vapor penetration through mortar at Purdue University. Write Owens-Illinois Glass Company for information relative to these tests.

UNDERWRITERS' GUIDE CARD*



Guide No. 40 UM2.6.5. December 13, 1937 File R2582

Owens-Illinois Glass Co., Mfr.,
Ohio Bldg., Toledo, Ohio.

Glass Blocks.

For window openings not exceeding 120 sq ft in area, nor 12 ft in width or height, subject to light fire exposure (Class F openings).

No. 1 Insulux hollow glass blocks, nominally 8 in. long, 4-⅞ in. wide, 3-⅞ in. thick; laid with ⅜-in. horizontal and vertical mortar joints; mortar consisting of one part portland cement, one part hydrated lime, and four parts silica sand by volume; each horizontal joint reinforced for full length with 20-gauge galvanized diamond mesh expanded metal; the glass block panels extending 3-½ in. into grooves 4-½ in. deep in jambs and lintels of the masonry openings, with loose mineral wool in the remaining spaces in the grooves, to provide for expansion of the glass panels; exterior jamb and lintel edges caulked with waterproofing mastic.

Marking: "INSULUX-1" molded on the inner surfaces of the blocks.

Listed—Reexamination Service.

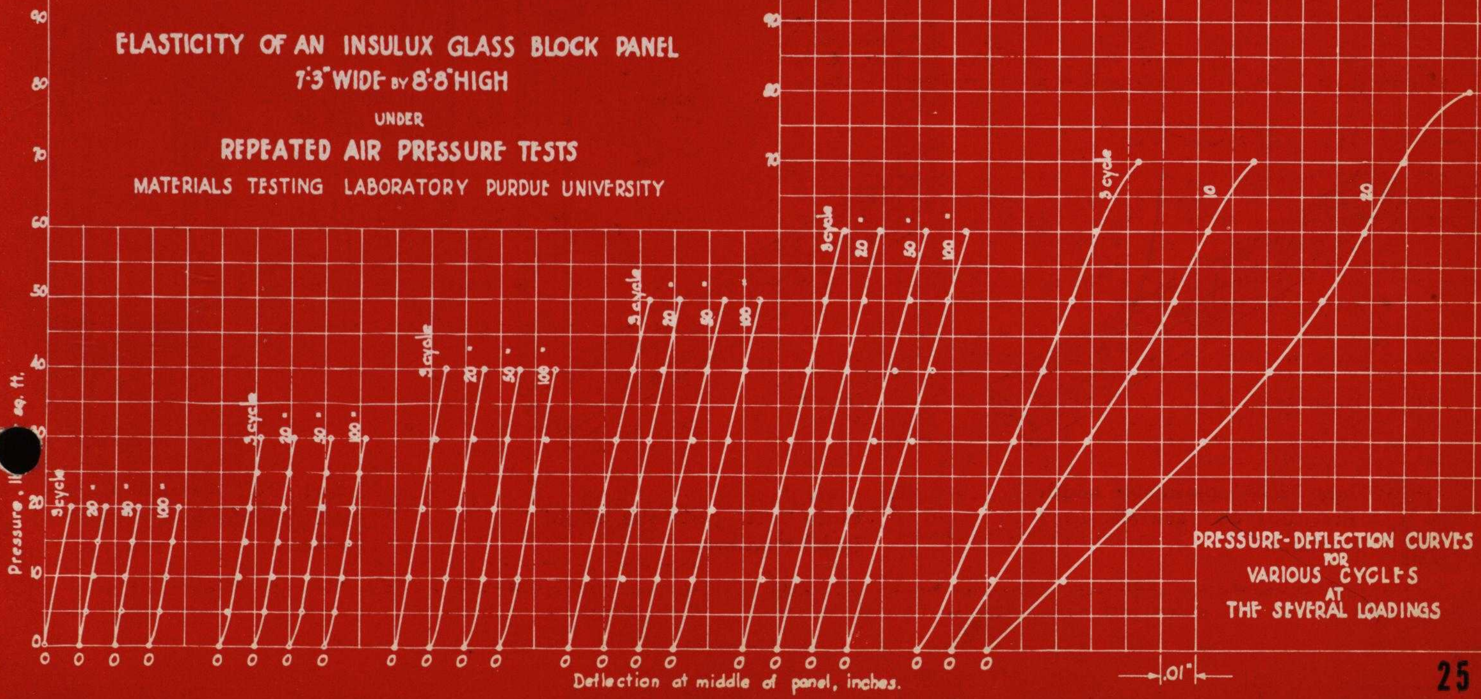
See description of Reexamination Service on guide card.

Authorities having jurisdiction should be consulted before installation.

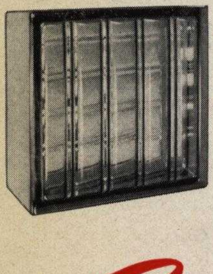
This card is issued by Underwriters' Laboratories, Inc.

*This type of construction may be called for in exterior walls by local fire insurance rating bureaus where fire exposure demands it, but is not required on street fronts and in other locations of normal exposure.

Important—This catalog supersedes all previous printings of the Owens-Illinois catalog in Sweet's catalog file and all reprints from same covering Insulux Glass Block.



NEW MODERN METHOD OF ERECTING INSULUX GLASS BLOCKS FOR INTERIOR PARTITIONS



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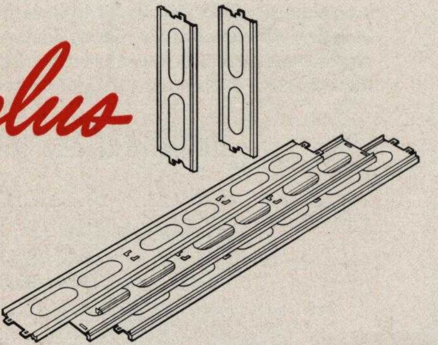
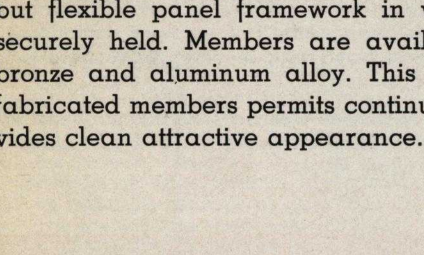


Equals RESULTS THAT DELIGHT the ARCHITECT, BUILDER and OWNER

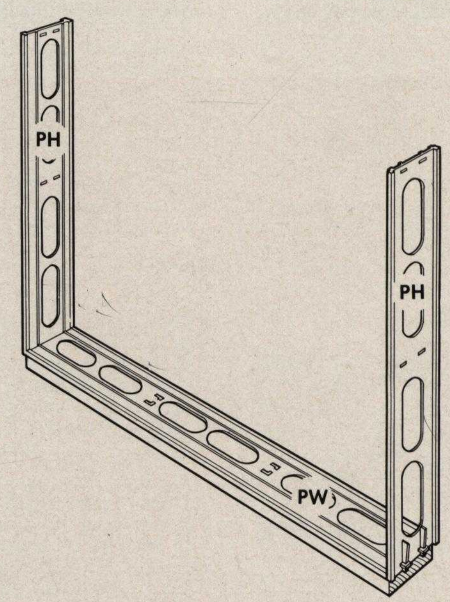
- The Revere patented system of erecting Insulux Glass Block partitions is a simple series of interlocking, prefabricated extruded metal members. They provide a solid but flexible panel framework in which the blocks are securely held. Members are available in architectural bronze and aluminum alloy. This method in using prefabricated members permits continuous erection and provides clean attractive appearance.

SIMPLIFIED ERECTION

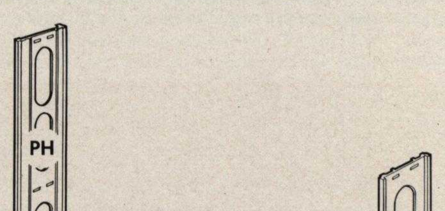
- The prefabricated members assemble and interlock easily and in only one way—THE RIGHT WAY. Shown above is a partition installation of the type ideally suited to Insulux Glass Block and Revere Metal Forms.



1 Lay "PW" perimeter width member on leveled floor runner.



2 Place "PH" perimeter height (side) members.



3 Insert "V" vertical (intermediate) members, engaging hooks.

SHAPES FOR INTERIOR CONSTRUCTION

THE *Beauty* OF INSULUX BLOCKS IS ENHANCED BY REVERE METAL

Other advantages are:

INTEGRAL AESTHETIC PANELS—Revere Metal blends with the glass to emphasize the panel unit rather than the block unit.

SYMMETRY—Every course of blocks is held in uniform alignment.

FINISHED JOINTS—Insulux Glass Block set in Revere metal provide a finished panel—no further work is required.

EASE OF ERECTION—Prefabricated members assemble and interlock easily.

ADEQUATE PROVISION FOR EXPANSION AND CONTRACTION—Flexibility of Revere metal permits slight movement of glass block.

LOAD DISTRIBUTION—Loads on continuous horizontal members are distributed through vertical members, affording uniform load distribution.

ELECTRICAL FACILITIES—Raceways for wiring and outlets are provided.

OPENINGS—Supplementary members are provided for doors, windows and cased openings.

CHOICE OF METALS—Architectural Bronze or Aluminum can be used alone or in combination. The prefabrication of both metals is identical.

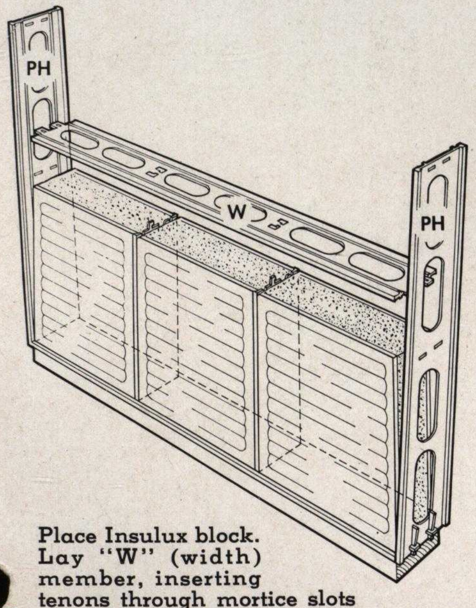
REPLACEMENT, DISMANTLING, AND RELOCATION—Without damage to Glass Blocks or Revere Metal, and at little expense, a panel can be dismantled and re-erected.

SALVAGE—Salvage of both Glass Block and Revere Metal approaches 100%.

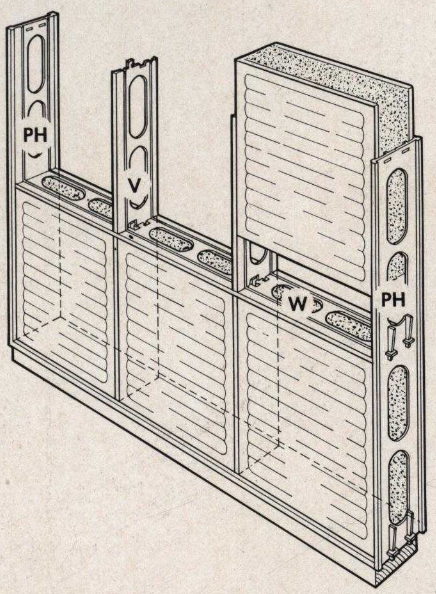
CONSTRUCTION DATA SHEETS

Data sheets furnish basic principles for the proper installation of INSULUX blocks set in Revere metal shapes and show their application to specific problems. For data sheets, address

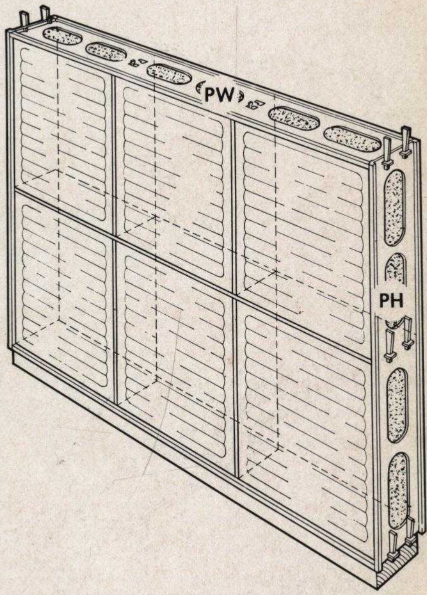
OWENS-ILLINOIS GLASS COMPANY • OHIO BLDG. • TOLEDO, OHIO



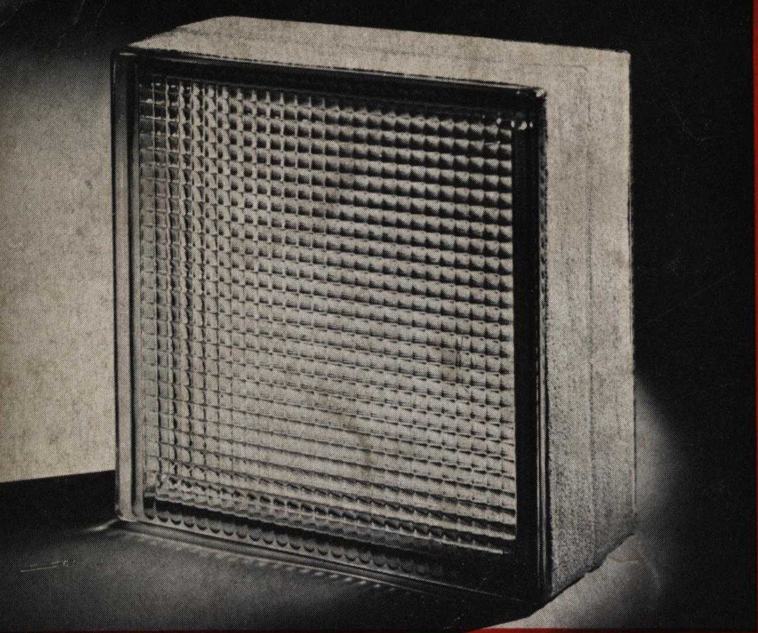
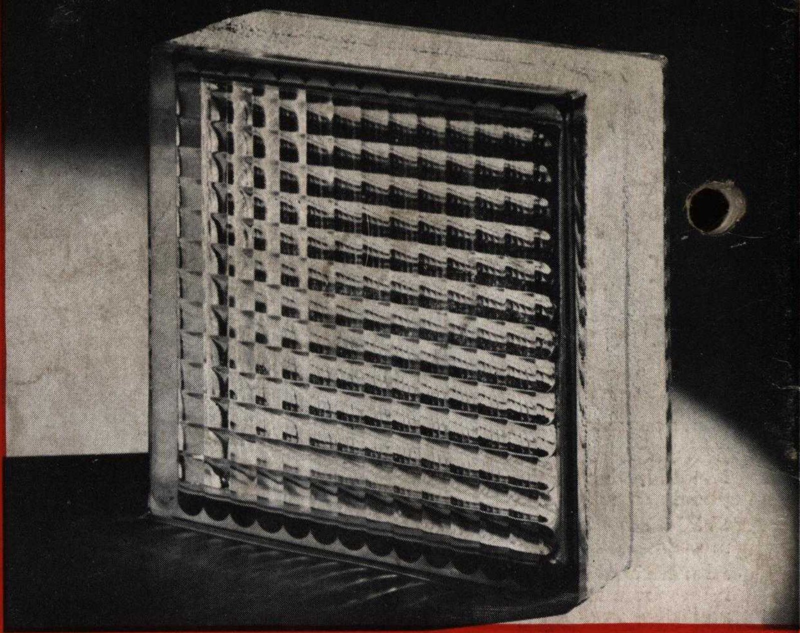
4 Place Insulux block. Lay "W" (width) member, inserting tenons through mortice slots of "PH" perimeter height. Slide "W" (width) to engage hooks of "V" (vertical) members and insert wedge keys.



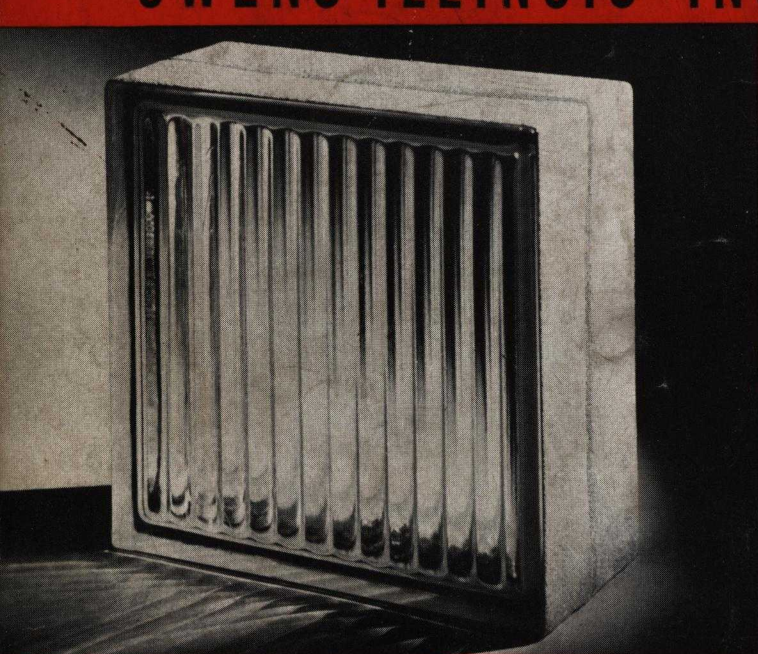
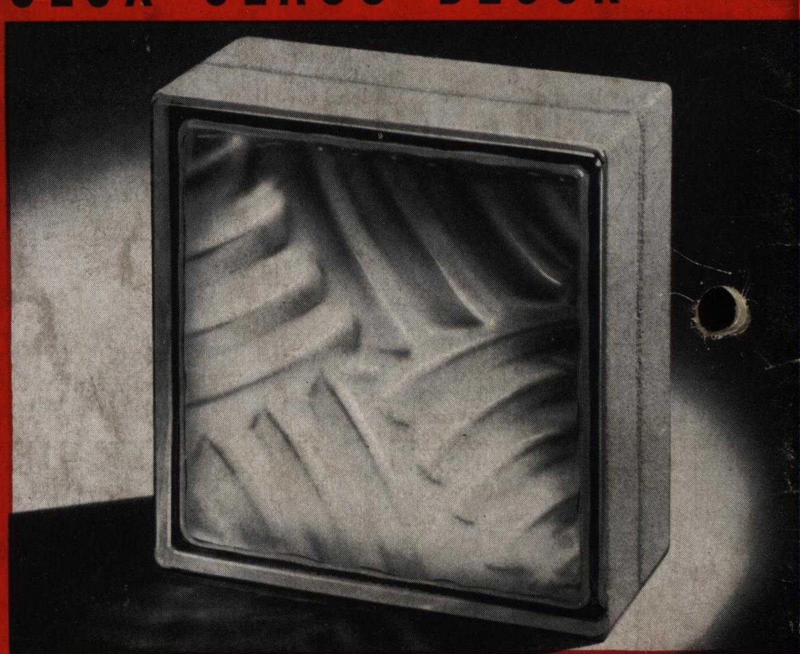
5 Repeat steps 3 and 4 for each course.



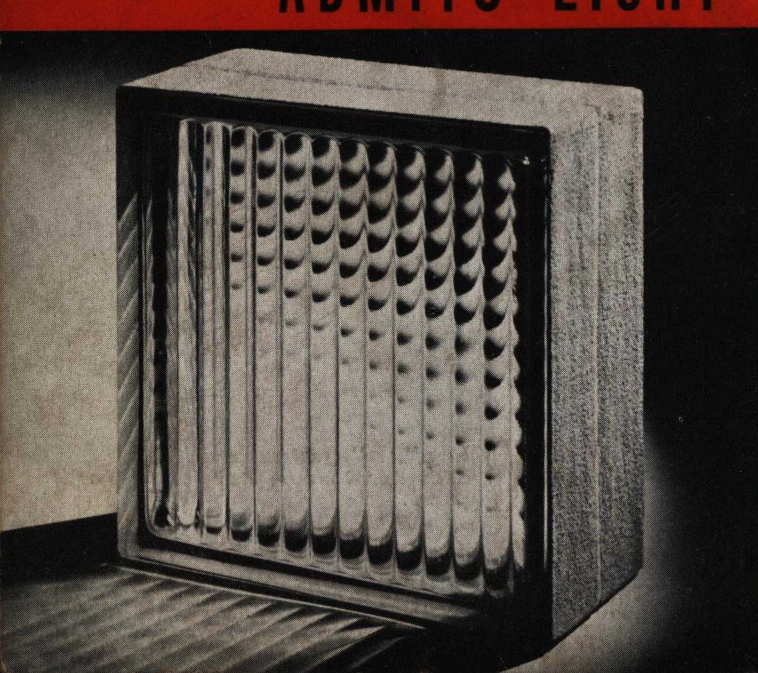
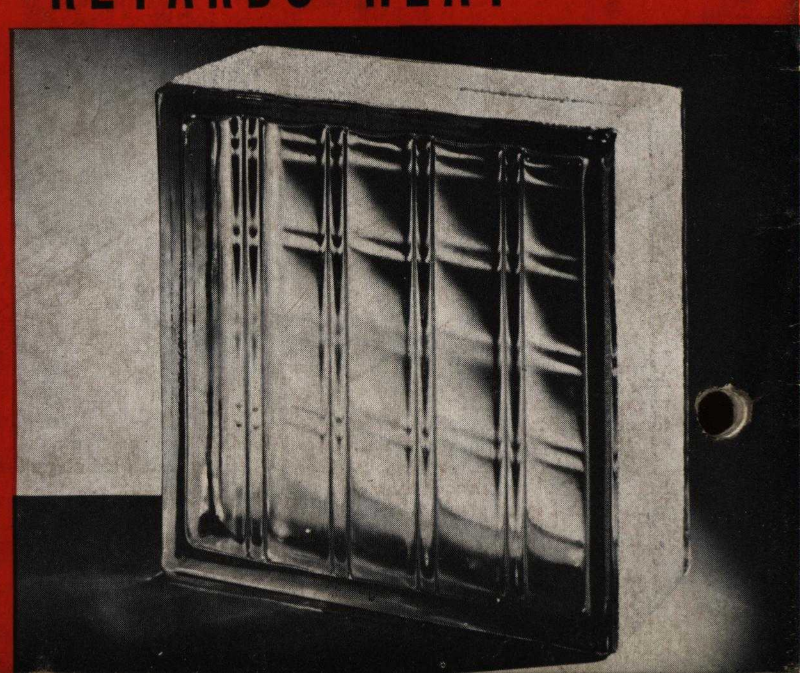
6 Lay "PW" (perimeter width) member to complete the panel.

OWENS-ILLINOIS INSULUX GLASS BLOCK

ADMITS LIGHT • RETARDS HEAT

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